NOVEMBER 1955

AMERICAN ARTISAN

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NOV 21 1955

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

IS THE BLOWER large enough for add-on cooling? ... 59

HOW AND WHERE to spot heating system noise ... 64

METHOD CONTROLS boost dealer's profits ... 72

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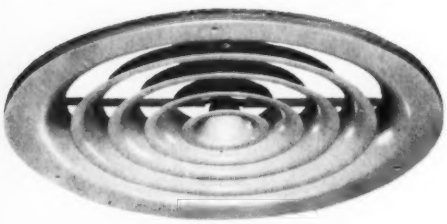
SHEET METAL STEEPLE rises on Boston's Old North Church ... 68

Install it . . . forget it

For All Overhead Heating or Cooling Installation
AIR CONTROL is Your Best Bet Fo
Customer Satisfaction and Trouble-Free Operatio



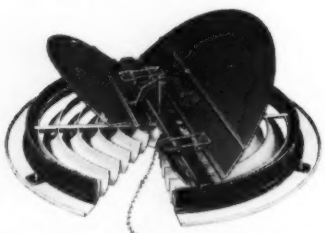
FLUSH TYPE

For top efficiency without interference to the trim, unbroken appearance of the ceiling. The Air Flow Rings deflect warm or cool air outward and down, and their curved design helps conceal the opening. Supplied in 7 sizes for 6" to 22" openings.

Tired of sending out your high-priced labor to make repeated "fr gratis" adjustments on diffusers that won't work efficiently?

What you need is the Air Control line. Take these ceiling diffus for example. With their many design and engineering advantages, a cinch to install them so they deliver the peak efficiency year a year that assures customer satisfaction. And there's not a smar looking, more economical diffuser anywhere.

Check with your jobber. He can supply Air Control ceiling diffu for all heating and cooling requirements in any residential or li commercial and industrial application. Call him today, or write



DUAL VALVE DAMPERS

The finest low-cost ceiling diffuser damper ever developed. "Butterfly" feature assures even air distribution over diffuser face. Easy chain operation permits balancing system at diffuser face. Completely assembled, easy to install. For Flush and Step Down types.

INSTALLATION RING

Goes inside the duct, provides a firm base for installation of Air Control ceiling diffuser.

SD TYPE

This is the ceiling diffuser you'll want to install every time for top efficiency in heating and cooling. Step-down design of Air Flow rings provides 30% more free area than flush types, resulting in minimum resistance. Air is delivered downward at greater angle for maximum effect. Beige prime coat, self-sealing rubber gaskets. In 7 sizes for 6" to 22" openings, with depth of step-down ranging from ½" to 2½".

AIR CONTROL
PRODUCTS, INC.

WRITE FOR BULLETIN 1

First in fuel units . . .

SUNDSTRAND

Once Sundstrand Gear Sets are "mated," they're never "divorced"!

Major reasons why Sundstrand Fuel Units are noted for freedom from binding and high volumetric efficiency (minimum slippage) are shown here. Pump parts are made to extremely close tolerances, verified for accuracy, and assembled as matched sets. Once in a set, a part is never removed during final assembly operations.

1. Three Sundstrand "Rigidmils" cut teeth on rollers. Once each "Rigidmil" is loaded with six rollers, operations are automatic until all teeth are milled on the six rollers.
2. Sheffield "Comparator" (graduated to 50/1,000,000") is used to check dimensions and relationship between rotor housing, crescent, rotor, and roller.
3. Finished "matched" gear set, with parts made and "mated" as accurately as those in a fine watch.

It's easy to see why practically everybody specifies Sundstrand!

SUNDSTRAND HYDRAULIC DIVISION

of Sundstrand Machine Tool Co.,
2210 Harrison Ave., Rockford, Illinois

Made in Canada by John Inglis, Ltd.,
14 Strachan Ave., Toronto

Made in Sweden by Sundstrand Hydraulic,
AB Stockholm

AMERICAN ARTISAN

NOVEMBER 1955

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Founded 1864
Volume 92 No. 11

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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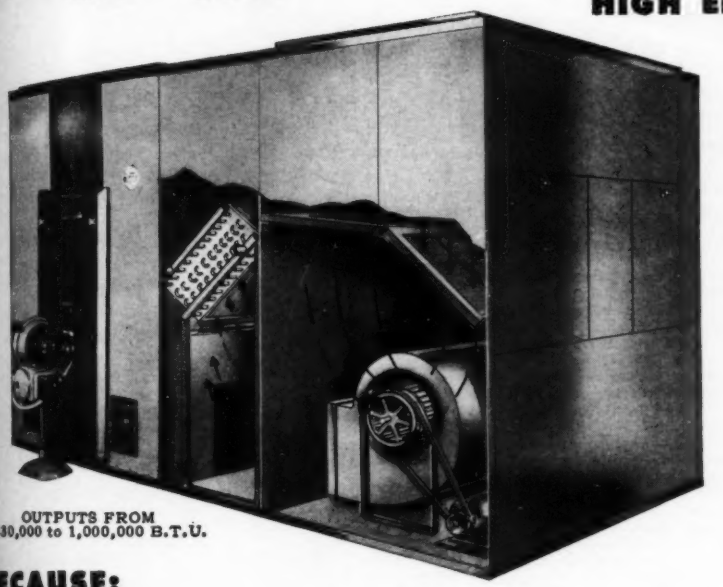
IT MAKES SENSE!

TO DESIGN YOUR ALL YEAR ROUND AIR CONDITIONING SYSTEM AROUND *Syncromatic* HI-CAP (HIGH CAPACITY)

OIL - GAS - COAL

HIGH EFFICIENCY HEVI-DUTY STEEL FURNACES



OUTPUTS FROM 330,000 to 1,000,000 B.T.U.

Designed expressly for
SCHOOLS
CHURCHES
GARAGES
PUBLIC AND COMMERCIAL BUILDINGS

Syncromatic COUNTER FLOW

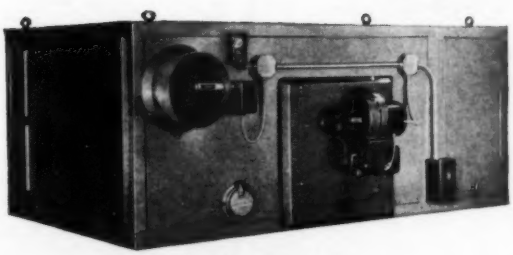
BECAUSE:

1 Combined heating and cooling equals low initial cost.

2 It insures adequate capacity for both heating and cooling.

3 It assures you of economical operation and maintenance.

4 By using Syncromatic you can make provisions to add cooling later without expensive structural changes and with no additions to the system other than the cooling equipment.



HI-CAP SUSPENDED FURNACE
OUTPUTS FROM 200,000 to 500,000 B.T.U.
OIL OR GAS FIRED

The Syncromatic Hi-Cap suspended series of steel warm air furnaces incorporates the same high qualities in design and construction as the famous Hi-Cap furnaces built for conventional duct systems. The suspended heater is accepted throughout the country as the efficient, modern, space saving way of heating all types of commercial and industrial buildings.

MANUFACTURED BY *Syncromatic* Corporation WATERTOWN, WISCONSIN

the editor's notebook

Thumbing Through This Month's Artisan

. . . we sit in on *A Review of Evaporative Cooling* with author R. S. Ash, who points out some reasons why this oldest of methods for cooling is finding new favor, as reflected by a fast rising sales curve. In the first of two informative articles, Mr. Ash explains the basic principles of evaporative cooling and outlines procedures for designing a cooling system, discussing sizing of coolers based on air volume and velocities, friction, insulation, etc.

Noise . . .

AND WE track down some elusive noise sources with S. Konzo and H. D. Bareither whose article, *Ear for Noise Starts Sound Control in Heating System* presents a set of standards for classifying noise in heating installations. Employing the human ear as the best instrument for locating and identifying sounds, the authors lead off with a treatment of the characteristics of noise as a basis for control. Sources are pointed out and solutions are suggested for eliminating the objectionable sounds which are likely to arise in a residential system.

Control . . .

AND WE watch the *Profits Grow with Procedure Control* in Artisan's " 'training program' . . . in print" series designed to help dealers and contractors train their employees in all phases of their business. This month's discussion describes a management technique which pays off in increased profits. We observe

AT-A-GLANCE
Sentry
TANK GAUGES
REMOTE READING
INDOORS • OUTSIDE
UNDERGROUND
ACCURATE, DEPENDABLE, WEATHERPROOF GAUGES
Easy to install...Easy to read!
Unaffected by specific gravity changes or variations, Sentry Remote Gauges accurately indicate liquid level at all times. Simplified mechanical operation eliminates unnecessary fittings, bulbs or levers for serviceman to tamper with as well as his need for access to building. Remote Gauge may also be combined with At-A-Glance Direct Gauge, shown below, for readings at both tank and remote location if desired. Non-corrosive, stainless steel and brass extension lines connect tank float with heavy-duty cast aluminum, weatherproof, thermometer type indicator — calibrated in fractions. Unconditionally guaranteed. Write for descriptive literature.
Type D-O and D-10 Gauge for basement tank installations with 2" and 1½" openings respectively.
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For accurate DIRECT tank readings
Fastest selling, most popular gauge in the industry. Simplified mechanism eliminates gears, cams, springs and magnets that wear out and cause trouble. Durably constructed with patented assembly featuring unbreakable, fog-proof, heavy-duty double plastic domes with printed calibration scale between for clear, easy-to-see readability from any direction. Gauge is Underwriters' Listed and will withstand in excess of 70 lbs. air pressure per sq. inch. Entire unit is non-corrosive and guaranteed leakproof under pressure filling and against defective operation, workmanship and materials. Quick, simple to install even on partially filled tanks. Write for complete descriptive literature.
AT-A-GLANCE
OIL GAUGE
KRUEGER SENTRY GAUGE
KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

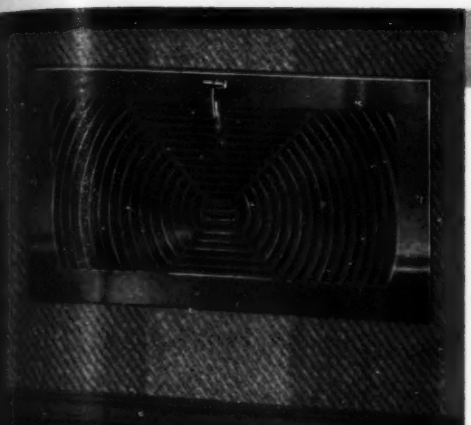
a streamlined heating-sheet metal operation based on close supervision of work, inventory, estimates and costs, and we see how tools developed in the shop have contributed largely to reduced waste of materials and time.

Replica . . .

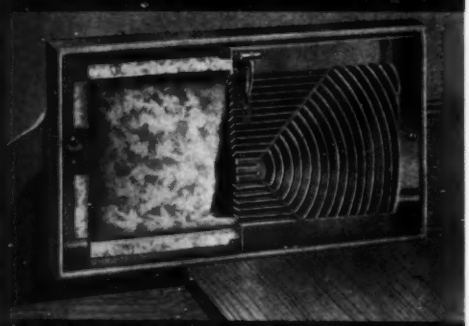
AND WE ride with the ghost of Paul Revere as *Steel and Copper Restore Historic Old North Church*, following the intricate fabrication techniques involved in the restoration of the steeple which was destroyed last year by Hurricane Carol. The job was complicated by the obvious necessity for strict adherence to original details at the same time providing a hurricane-proof structure. We see how sheet metal in the hands of a resourceful contractor answers the call on all counts.

Australian Reader Drops in for Shop Talk

IT'S NOT every day that subscribers from distant lands drop into the editor's office for a visit and to chat about warm air heating, air conditioning and sheet metal contracting. However, one of our Australian readers, Geoffrey Crockford of Melbourne, was in to see me in October as he passed through Chicago on a round-the-world business trip. Mr. Crockford, from whom we hear regularly, reported that business activity in Australia is at its peak but that many of the procedures used lag behind those recommended in America today. He did point out one very pertinent sales approach used to sell residential air conditioning in his country that we have



NO. 401 **SIDEWALL DIFFUSAIRE.** The first thoroughly practical sidewall diffuser in the popular price field and still by long odds the first choice. Perfect air pattern, positive balancing adjustment. Sizes 10 x 6, 12 x 6, 14 x 6.



NO. 401 **BASEBOARD INSTALLATION.** Our No. 5 Baseboard frame in combination with the No. 401 Diffusaire provides a very simple and neat 2-piece baseboard installation.

NO. 411 **FLOOR DIFFUSAIRE** has opposed louvers for more efficient air pattern, positive balancing adjustment. Available in 9 popular sizes.

TREMENDOUSLY

Popular

ARE THESE H & C DIFFUSAIRES!

The extremely large and constantly increasing demand for these H&C Perimeter Diffusaires is the soundest kind of proof that in the minds of the vast majority of installers they are the outstanding means of efficiently and economically achieving the best possible results in perimeter heating and cooling.

The air pattern of each blankets the outer wall of the average room, and is directed in a manner that practically eliminates wall streaking. The air-throw is exceptionally high, an important factor in securing maximum comfort in cooling applications.

See and inspect these excellent diffusers at your H&C Jobbers. We believe you will agree with their great host of users that on the score of both cost and comfort they give you more.

NO. 405 **BASEBOARD DIFFUSAIRE.** Particularly good for established construction or where solid masonry walls are encountered. No stackhead is required. Provides same air pattern as No. 401. One size only for 2¼" x 12" boot.

Ask your Jobber for a copy of our new Catalog "A"

HART & COOLEY MANUFACTURING CO.

HOLLAND, MICH.

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

the editor's notebook

(continued)

tended to use only occasionally. He said that cooling, as such, in residences is not nearly as important in the Melbourne area as it is in the United States — that dealers found the strongest sales approach is built around the advantages other than cooling offered by residential air conditioning. He named freedom from frequent dusting, a much lower noise level in the house and lower decorating costs.

Products to Adapt To Needs of Future

RECENTLY the 1956 line of Frigidaire heating and cooling equipment was previewed by a group of editors. Roger M. Kyes, vice president, General Motors Corp., was host. In his speech of welcome, Mr. Kyes described the engineering ideas incorporated in the new products and made a prediction that in 1965 more than 60 percent of America's homes would be air conditioned. I too feel that this is so and that manufacturers creating products today that can be adapted to the needs of the industry 10 years hence are hitching their wagons to the right star.

Communities Urged To Study Water Problem

THE CHAMBER of Commerce of the United States notes that hundreds of communities experienced water shortages this past summer. The reason, the chamber points out, is that more people are using more water; cities are outgrowing their water supply systems owing to shortsighted planning. According to the chamber, there are about 12,500 communities

NOW!
10 Production Tools in One Complete Tool
SMITH'S
180° UNIVERSAL BRAKE
The Most Versatile Tool You've Ever Seen—A Money-maker in Any Shop! Ideal for Air Conditioning, Heating and Ventilating Contractors, Sheet Metal Shops, Production Shops!
Capacity 3/16" x 1¼" wide mild steel, to 18 gauge x 26" wide.
Double seaming a container . . .
5 OLD FAMILIAR TOOLS SHOWING TYPICAL WORK
5 NEW TOOLS WITH NEW USES
STANDARD BRAKE
CLOSED SECTION OR TUBE BRAKE
BAR FOLDER
CONTAINER DOUBLE SEAMER
BOX AND PAN BRAKE
RADIUS BRAKE
SMITH'S CLEAT BENDER
SQUARE HOLE OR THROAT FLANGER
BAND OR STRIP BENDER
180° FLANGER In One Operation

Smith's 180° Universal Brake is the most versatile sheet metal tool ever developed. Capable of making almost any free-hand bend you desire, it combines the functions of 5 old familiar tools with 5 new tools—adding up to the best value in a sheet metal tool you ever saw! The 180° Brake is the answer to the demand for a free-forming sheet metal brake that is easy to operate . . . fast . . . and reasonable in cost. Equally efficient for production, maintenance or experimental work because it will bend almost any shape you can conceive, quicker than you would believe, Smith's 180° Universal Brake will save production time, floor space and capital investment. All steel construction, with Torrington Needle Bearings at hinge points, and packed with features to assure maximum accuracy, easy forming and long life, Smith's 180° Brake will be a money-maker for you.

See your Jobber or write direct for complete details today.

R. E. SMITH

1124 ELIZABETH AVENUE • WAUKEGAN, ILLINOIS

the editor's notebook

(continued)

in the country which own and operate their own water systems, the majority of which are the responsibility of a city executive with no authority to make long-range plans. The remedy, the chamber believes, lies in permanent water boards or commissions made up of citizens with a constructive interest in water supply planning. A recent survey by the American Water Works Association disclosed that of cities reporting, 43 percent had placed their water systems under the control of a water board.

Hurricane Victim "Back to Normal"

RIGHT AFTER the devastating floods that followed hurricane Diane, I learned that subscriber Arthur J. Cook, of the McClure & Ball Co., Worcester, Mass., had been hard hit at his place of business. The flood had carried away just about everything that wasn't anchored down. Among the losses were his reference books and back issues of American Artisan. When Mr. Cook wrote me I immediately sent everything that he requested. In late September he wrote: "The books and pamphlets arrived this morning and we wish to thank you sincerely for your promptness in sending these to us. Our shop is back to 85 percent normalcy. It will take us several weeks more to put our office back into shape."

I was glad to learn that Mr. Cook found the time to write us when there was so much else to do and that things are looking brighter for him and the other members of his company. I also was pleased that we at American Artisan could be

they go HEAD over HEELS for PEERLESS versat-all heating

Pardon the upside-down nature of the message here . . . but it illustrates a point:

Peerless is not an ordinary line of heating and air conditioning equipment.

When engineering advances have justified it, Peerless has dared to be different. Peerless has always maintained the same high quality . . . so Peerless has come to be known for QUALITY, to customer and dealer alike. That is what first sold Peerless 55 years ago and that's what sells it today . . . QUALITY, combined with the latest engineering developments . . . at a competitive price.

Peerless is the kind of furnace or air conditioner you would make for yourself, for your own family, for your home. When you recommend it, sell it, install it, you know you have done the best by your customer that anyone could do, anywhere.

A Peerless customer is a Peerless salesman!

EVERY SALESMAN A LEADER . . .

. . with the new Peerless Sales Presentation. Here, in 58 plastic-coated, wear-resistant pages is packed more than a half-century of selling experience.

Use it, follow it, and anyone can become a star salesman.

Every Sales Presentation is like another salesman on the staff.

PEERLESS FURNACE & FOUNDRY, INC. AA
1853 Ludlow Avenue — Indianapolis 7, Indiana

Gentlemen:
Yes, I want complete information on the Peerless line of highest quality heating and air conditioning equipment.

Name.....

Company.....

Address.....

City..... State.....

☐ Have someone show me this sure-fire "extra" salesman — the Peerless Sales Presentation.

the editor's notebook

(continued)

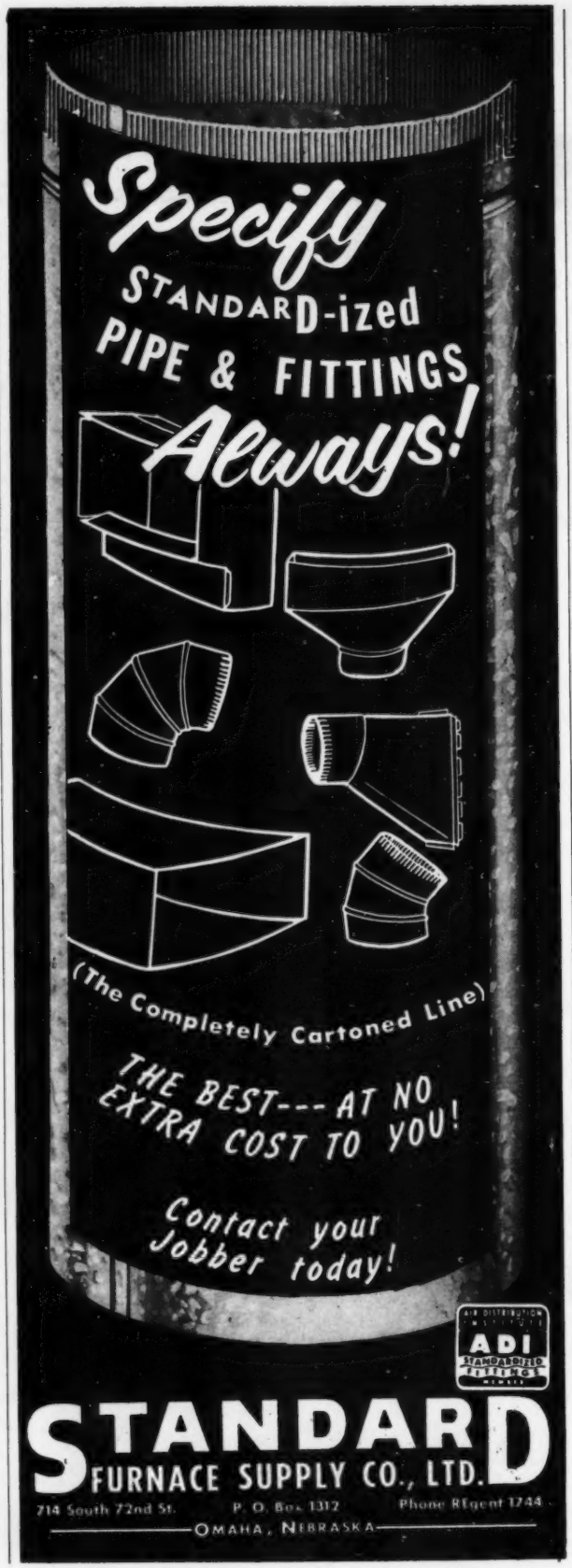
of help even though we were many miles away.

Management Schools Stir Enthusiastic Response

THIS ITEM is being written in Columbus, Ohio. I've just been talking to a number of dealer-contractors who attended the business management course conducted at the Ohio State University under the sponsorship of six local wholesalers and one from Mansfield. Each of the dealers I talked with praised the schools, thought the time was well spent and would attend similar courses if advanced study was offered. All paid compliments to the instructors. Bob Weaver, S. R. Weaver Furnace Co., had this to say: "The method of presentation made the course both interesting and informative." H. A. Crawford, Crawford Furnace Co., said: "The subjects covered served to confirm that many of our established procedures were correct." T. W. Casey, Kramer Heating Co., said "The intangible assets of the course are many. I feel that everyone benefited by his attendance." And so the comments go, all indicating that business training programs are well worthwhile.

Urges More Employee Initiative

ONE OF MY OWN convictions received a boost the other day when I read the report made to the American Management Association by its president, Lawrence A. Appley, who said that many of the people he has contacted during the past year have voiced their opinion that the training of employees in the essentials of busi-



the editor's notebook

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ness management is fast becoming a *must* if a company is going to experience a healthy growth each year.

I have talked with dealer-contractors on a number of occasions about this subject of passing along responsibilities to capable employees. It's my belief that the head of a company is fast becoming its best public relations department and that many of the duties of management must be borne by proven employees. Such an arrangement makes for better management in general because decisions can be made when the "boss is away."

Reader Uses Inexpensive Merchandising Plan

WHEN IN ALBANY, N. Y. recently, I stopped by to visit dealer Carl A. Fraser who showed me several of his merchandising plans. The one I liked best was a brightly colored pencil with this message, "Your home is the most important spot in the world. Why not let Carl Fraser heat and cool it for you?" A brief message such as this on a frequently used item has a strong appeal to prospects.

'Sell Quality' Good Slogan for Industry

DID YOU NOTICE the September ad published by the Peerless Furnace and Foundry Co.? It said "Call it a buyers' market if you will. We prefer to think of it as a 'quality' market." The company has a good point here — if the warm air heating salesman will sell quality throughout his sales pitch, the average buyer soon will forget that he is in a position to pick the dealer to install his new heating system. He will gain the

LENNOX

IS NUMBER ONE

Thousands of loyal Lennox dealer-partners have helped make Lennox the No. 1 name in warm air heating. Here, in this representative listing, are but a few who have been

LENNOX DEALERS FOR 25 YEARS OR LONGER

- Cornwall & Story Hdw., Turtle Lake, Wisc.
- Durand Hdw. Co., Durand, Wisc.
- F. C. Gahnz, Cochrane, Wisc.
- Griebenow Co., Owen, Wisc.
- Palmer Hanson, LaCrosse, Wisc.
- Hayward Plbg. & Htg., Hayward, Wisc.
- E. E. Howland, Merrill, Wisc.
- Mondovi Hdw. Co., Mondovi, Wisc.
- Wolf Hdwe., Spring Valley, Wisc.
- Paul's Sht. Metal, Rice Lake, Wisc.
- Prentice Bros., Cornell, Wisc.
- Rapids Sht. Mtl. Wks., Wisconsin Rapids, Wisc.
- Jas. B. Reisinger, Sparta, Wisc.
- Stronks Hdw. Co., Baldwin, Wisc.
- Warlum-Robinson, Inc., Neillsville, Wisc.
- C. Heiser Hdw. Co., Platteville, Wisc.
- City Plbg. & Htg. Co., Ellsworth, Kans.
- W. A. Johnson & Son, Downs, Kans.
- Geo. W. Landis, Spring Hill, Kans.
- Peterson Plbg. Co., Clyde, Kans.
- Baxter Sht. Mtl. Wks., Baxter Springs, Kans.
- A. A. Doerr Merc. Co., Larned, Kans.
- Brizee Metal Works, Twin Falls, Ida.
- Greenwood Furnace Company, Seattle, Wash.
- T. P. Newell Plbg. Co., Great Bend, Kans.
- F. D. Street, McPherson, Kans.
- Larson Hdw. Co., Lake Norden, S. D.
- Big Four Hdw. Co., Stanberry, Mo.
- Isaac Bros. Plbg. & Htg., Warrensburg, Mo.
- Lowry & Murphy, Mexico, Mo.
- J. W. Marrs, Lexington, Mo.
- Ritter Hdw., Higginsville, Mo.
- L. H. Rost, Jefferson City, Mo.
- S. Wilkerson, Union Star, Mo.
- A. E. Brabham, Geneva, Nebr.
- A. V. Hlava Hdw. & Plbg. Co., Ravenna, Nebr.
- H. E. Jones, Aurora, Nebr.
- Knapp Sht. Mtl. Wks., Hastings, Nebr.
- A. A. Recht, Edgar, Nebr.
- Rupp & Co., Seward, Nebr.
- Stander & Stander, Louisville, Nebr.
- Weaver & Miller, Milford, Nebr.
- B. & E. Hdw. Co., Emerson, Nebr.
- R. C. Boyd & Son, Columbus, Nebr.
- Morgan Hdw., Atkinson, Nebr.
- Sindelar Hdw., Howells, Nebr.
- Carl Himes, Delta, Colo.
- W. B. Johnson, Grand Junction, Colo.
- E. S. Wolfer, Woodburn, Ore.

Ask a Lennox Dealer why he's a Lennox Dealer... then you'll be one too!

THE LENNOX FURNACE COMPANY

MARSHALLTOWN, IOWA • SYRACUSE, N. Y. • COLUMBUS, OHIO
SALT LAKE CITY, UTAH • LOS ANGELES, CALIF. • FT. WORTH, TEXAS
DECATUR, GA. • DES MOINES, IOWA • *In Canada:* TORONTO and CALGARY

the editor's notebook

(continued)

impression that there's only one dealer for him to deal with if he doesn't want to sacrifice comfort for lower quality.

Education Plays Big Role In Warm Air Industry

THE RAPIDLY expanding list of services offered by the warm air heating-residential air conditioning dealer and the sheet metal contractor creates the problem of education for all branches of the industry. The dealer needs more trained mechanics, more trained salesmen, trained office assistants; the wholesaler needs more engineers, salesmen and office personnel; and the manufacturer needs a larger staff of representatives, market promotion men and training counselors. Where are all these people going to come from? They are not going to be found in any other industry; thus they must be trained by the people in the industry and those engaged in the educational field. I liked the comments made by A. Boyd Campbell, president, National Chamber of Commerce, who said, "The entire history of our nation could be written in terms of upgrading the individual through education. Our history is a record of opening individual opportunities — and preparing the individual to grasp them. The objective of educational programs must be to turn out a product — the adaptive and the versatile individual — that is equipped to cope with whatever problems the future may hold in store.

"The point is that we no longer wait for miracles to happen. We are organized to make them come to pass — and prepared for their reception long in advance.

"All this makes it possible for us to say that today business is more peculiarly aware of what the future holds in store than at any time in the past.

"We can forecast the world of 1975 with some degree of accuracy. That is because the actual things we will be using in 1975 are already in prototypes or have at least progressed to the blueprint stage.

"May I suggest that this foreknowledge is of utmost importance to education? Business in all its variations is offering the youth of today unparalleled and unprecedented opportunities. It is largely the responsibility of educational facilities to prepare them for those opportunities."

NATIONAL LOCK

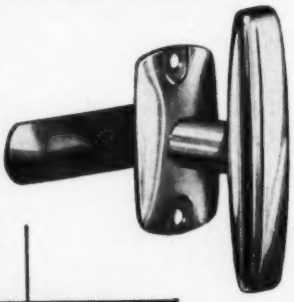
makes the hardware that makes the difference in user appeal of your products

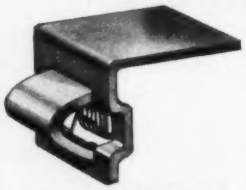
Made of Steel. Available in standard plated or enamel finishes.

ATTRACTIVE, DURABLE HARDWARE FOR ACCESS PANELS ON FURNACE AND AIR CONDITIONING EQUIPMENT

61-366 LATCH

Assures attractive styling coupled with positive latching action. Regularly supplied in bright Nickel and bright Chrome plated finishes.





61-3319 CATCH

Easily applied for a variety of applications on metal cabinets. Plain Steel and Cadmium plated finishes.

63-X3017 KNOB

Concave face. Hollow metal construction. Made of wrought Steel. Standard plated or enamel finishes.

Write for complete information

NATIONAL LOCK COMPANY
Rockford, Illinois

the editor's notebook

(continued)

"All this makes it possible for us to say that today business is more peculiarly aware of what the future holds in store than at any time in the past.

"We can forecast the world of 1975 with some degree of accuracy. That is because the actual things we will be using in 1975 are already in prototypes or have at least progressed to the blueprint stage.

"May I suggest that this foreknowledge is of utmost importance to education? Business in all its variations is offering the youth of today unparalleled and unprecedented opportunities. It is largely the responsibility of educational facilities to prepare them for those opportunities."

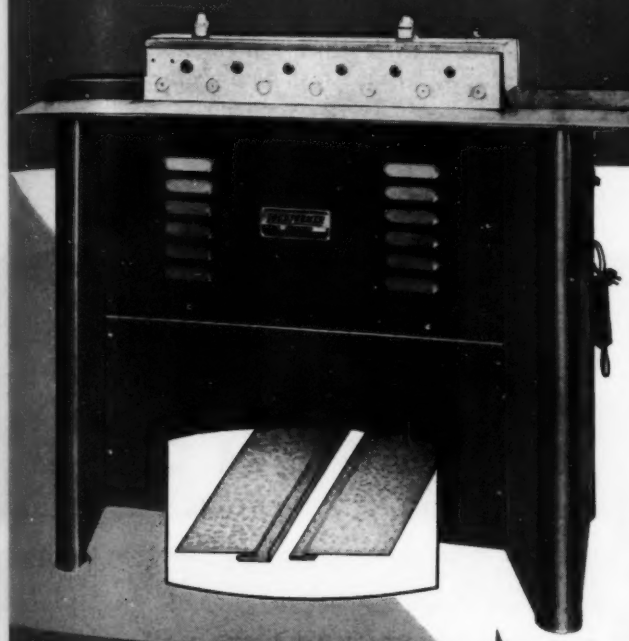
New England Spirit Overcomes Flood Havoc

AS WE GO to press with this issue, the New England states are experiencing for the second time in two months the ravages of flooding rivers and streams. I have learned from members of our industry that about one half of the reconstruction work was washed out. It's my hope that this is the last time nature goes on this type of rampage. Andrew Gagarin, president of Torrington Mfg. Co., wrote regarding the earlier floods, "It (making the community liveable) looked like an almost impossible task but the people began performing miracles in a matter of hours." It is this spirit that makes our nation what it is and makes me confident that this second calamity will be overcome quickly.

Clyde M. Barnes

EDITOR

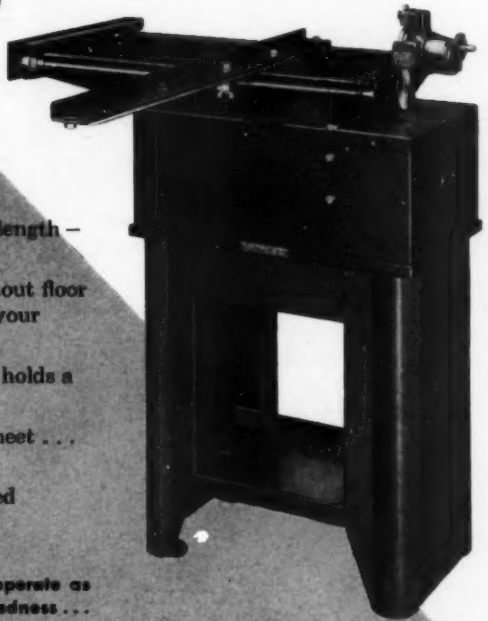
Here's how the two newest members of the Lockformer Team work to make money for you.....



LOCKFORMER SNAP-LOCK MACHINE

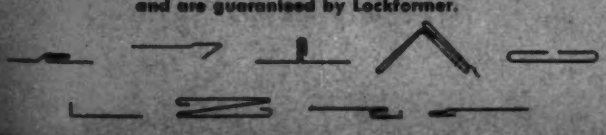
- fabricates both the receiver lock and the offset lock for both round and square duct.
- takes any diameter of pipe or size of duct — no restrictions because of its flat design.
- effects easy nesting and storage of work for assembly on the job.
- fabricates 24 to 30 gauge, requires only standard 110 or 220 volts.
- costs less than one-third as much as other types of similar Snap-Lock equipment.

LOCKFORMER SLITTER



- handles any metal up to 20 gauge—shears any length—requires only about 31″ x 15″ floor space.
- comes as a complete portable unit—with or without floor stand—or as slitting attachment which mounts your present Lockformer in 10 minutes.
- handles 30 to 35 feet of material per minute . . . holds a tolerance to ½″ on an 8′ sheet.
- shears as little as ⅛″ or as much as 24″ from a sheet . . . handles material as wide as 48″.
- costs only a fraction of what even a foot-operated shear would cost.

These new Lockformer units are as simple and foolproof to operate as the Lockformer itself . . . are built to the same heavy-duty ruggedness . . . and are guaranteed by Lockformer.



One man with a Lockformer makes more Pittsburgh Locks than 14 men with 8 brakes

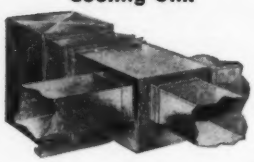
Write for complete information

THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD CHICAGO 50, ILLINOIS

. . . the industry's most complete yearound air conditioning line

Duct Type Cooling Unit



Assure yourself profits 365 days a year. Offer your customers a choice of more than 140 heating and cooling units . . . all featuring the most modern developments and design . . . to fit any type or size house.

Get your furnaces, fittings and cooling units *all from one source* under one brand name . . . WILLIAMSON. Let us show you in detail how comparison proves WILLIAMSON selling superiority all year 'round.

WILLIAM S

HEATING &

Compressor Unit

Counter-Flow Heating and Cooling Unit

Space Cooling Unit

act for profits everyday!

COMPLETE HEATING LINE . . .

- GASAVER and OILSAVER Deluxe Furnaces . . . 1st really new feature in warm air heating in last quarter century. Lo-Boy, Hi-Boy, Gravity
- FLO-WARM Gas, Oil and Coal Furnaces . . . highest quality at price unmatched for value per dollar. Lo-Boy, Hi-Boy, Counter-Flow, Horizontal
- ASSEMBLED Gas and Oil Furnaces . . . WILLIAMSON quality at competitive prices—factory assembled, wired and tested. Lo-Boy, Hi-Boy, Counter-Flow, Horizontal.

COMPLETE COOLING LINE . . .

- . . . WATERLESS AIRefrigeration with unsurpassed efficiency—featuring exclusive Counter-Flow or Duct Evaporator cooling that requires no additional floor space in a slab perimeter or basement house.
- . . . WATER-COOLED Units that need only 2.7 sq. ft. of floor space.
- DUCT, PIPE AND FITTINGS for any Heating or Cooling System . . . die-cut, pre-fabricated.

Nationally Advertised in . . .

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Gentlemen: Rush me details on WILLIAMSON year 'round profits.

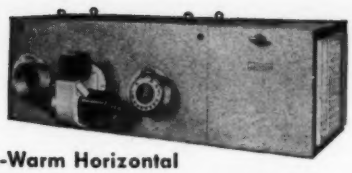
Name.....Title.....

Firm.....

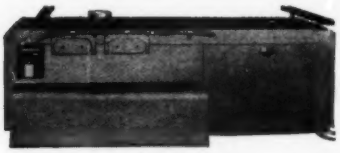
Address.....

City.....Zone.....State.....

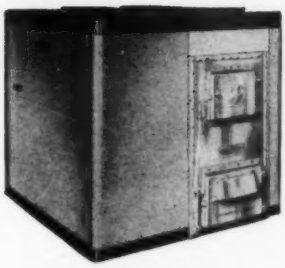
Gasaver Lo-Boy



Oil Flo-Warm Horizontal



Assembled
Gas Horizontal

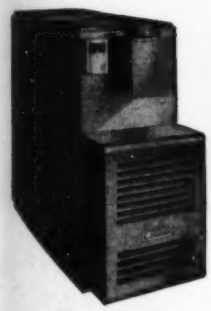


Coal Flo-Warm

SON
COOLING

Oilsaver Lo-Boy

Gasaver Gravity



Assembled
Gas Lo-Boy

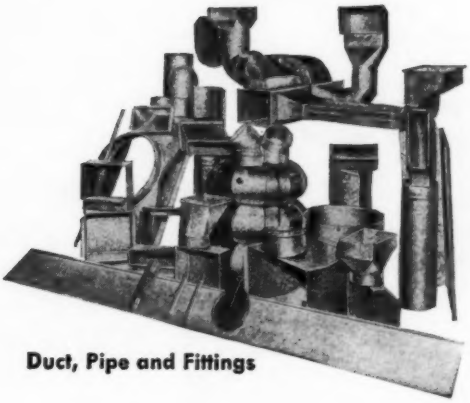
Assembled
Oil Lo-Boy

Assembled
Oil Hi-Boy

Assembled Oil
Counter-Flow

Assembled
Gas Hi-Boy

Gas Flo-Warm Lo-Boy

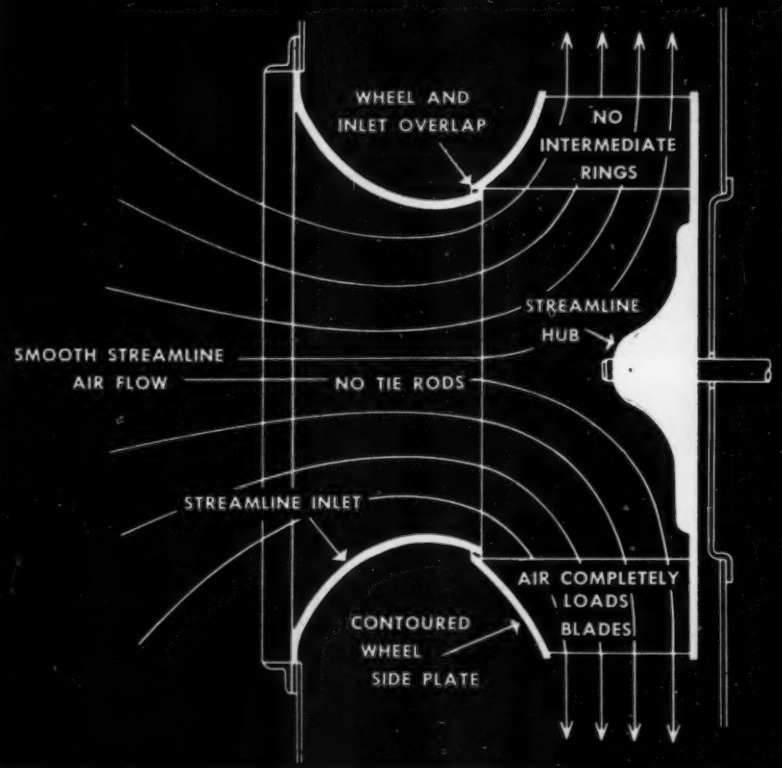


Duct, Pipe and Fittings

Oil Flo-Warm
Hi-Boy

Fact:

Westinghouse Aerodynamic Fan Line More Efficient,



MECHANICAL EFFICIENCY 86%...
STATIC EFFICIENCY OVER 80%

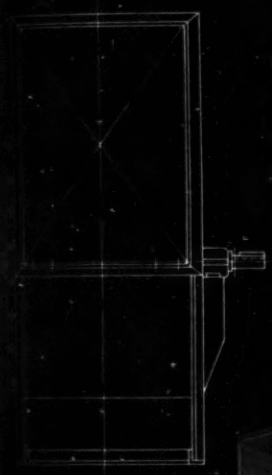
With unobstructed airflow through the wheel in all sizes, the "Silentvane" fan line also offers these other practical advantages:

1. **True self-limiting horsepower characteristic**
2. **Peak horsepower developed in normal selection range**
3. **Quiet, stable operation**
4. **Sharply rising pressure characteristic throughout normal performance range**

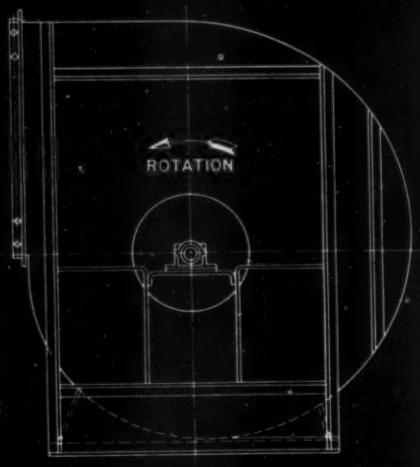
WIDE RANGE OF APPLICATION

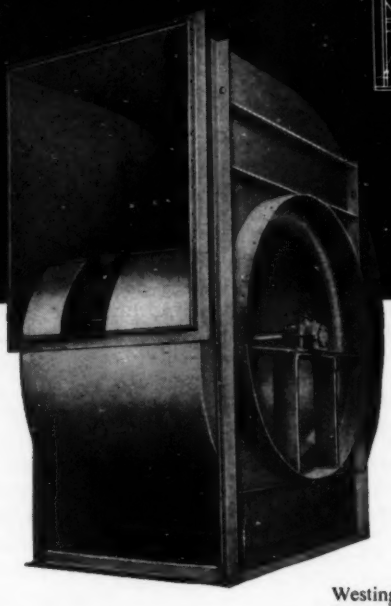
Handling from 600 to 500,000 cfm, the performance-proved Westinghouse "Silentvane" fan line provides an almost unlimited choice of air moving equipment. Coupled with Westinghouse-Sturtevant power-saving Vane Control, "Silentvane" fans offer precise control of air volume at optimum efficiencies. In smaller sizes, 36" and under, fan arrangements are convertible.

ic Research Makes "Silentvane" nt, Quiet, Non-Overloading



Rugged housing construction and angle iron bracing prevents vibration . . . means quieter operation.





IRFOIL BLADING VAILABLE

. . where quiet operation d power evaluation are ime considerations— 5% less noise intensity . . . 2% mechanical efficiency.

MORE FACTS?

Call your nearest Westinghouse-Sturtevant Sales Engineer . . . he's the "Man with the Facts" on heating, air handling, and electronic air cleaning . . . or fill in the coupon below.

WESTINGHOUSE AIR HANDLING

U CAN BE SURE . . . IF IT'S

Westinghouse

J-80437

Westinghouse Electric Corp.
Sturtevant Division, Dept. 7L
Hyde Park, Boston 6, Mass.

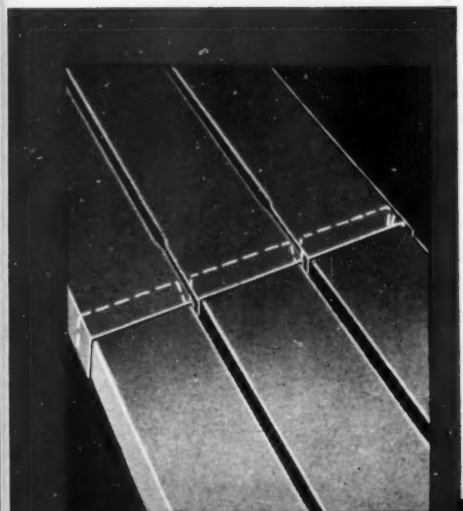
I'm interested in your new booklet. Send me a copy right away.

NAME AND TITLE.....

COMPANY.....

CITY.....STATE.....

Prospects for MILCOR* Steel Roof Deck are all around you—



Unique design permits sections to be nested and lapped quickly and easily. Plates interlock firmly, to provide an ideal base for permanent roofs.

MILCOR Steel Roof Deck gives you opportunities for a big profitable part of the roofing job. You can get these jobs without much extra effort — because with Milcor Steel Roof Deck, you can offer your customer these important advantages:

Speedy Installation—By using Milcor Steel Roof Deck, you can get his building under cover *fast*. That's because you can erect it anytime — in any weather. Besides, roofing can be applied immediately — no "drying-out" period is needed.

Economy — Fast installation cuts job costs. And Milcor Steel Roof Deck is light in weight — the finished roof requires less costly supporting structures.

Permanence — Milcor Steel Ro Deck lasts the life of your custome building.

Fire-Resistance — Your customer g all the advantages of non-combusti construction.

Adaptability — Milcor Steel Ro Deck can be used for flat, pitched, arched roofs.

Attractive Appearance — Smoo surface provides attractive, unbroke ceiling design.

Our engineers will prepare comple erection drawings for your jobs no extra cost. Catalog No. 240, ava able upon request, gives you the co plete information you want on loa installation, and insulation.

*Reg. U. S. Pat.

INLAND STEEL PRODUCTS COMPAN

4023 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

BALTIMORE 5, MD., 5300 Pulaski Highway • BUFFALO 1, N. Y., 64 Rapin St. • CHICAGO 9, ILL., 4301 S. Western • CINCINNATI 25, OHIO, 3240 Spring Grove Ave. • CLEVELAND 14, OHIO, 1541 E. 38th St. • DETROIT 2, MICH., Amsterdam Ave. • KANSAS CITY 41, MO., P. O. Box 918 • LOS ANGELES 58, CALIF., 4807 E. 49th St. • 4807 E. 4th NEW YORK 17, N. Y., 230 Park Ave. • ST. LOUIS 10, MO., 4215 Clayton Ave.

Hold Hearings on Dust Control Code

THE NEW YORK STATE Board of Standards and Appeals has recently issued a proposed revision of Industrial Code Rule No. 12 relating to control of dust, gases and fumes. Included are requirements for exhausting dust created by grinding and polishing wheels and other machines, requirements for exhaust systems, fans, air cleaning devices, open surface tank operations, abrasive blasting operations, and welding, brazing, flame cutting and metallizing operations. Public hearings on the proposed revision have been held in New York City, Albany, Rochester and Buffalo.

Solving Dealer Problems — NWAHACA Convention Target

FACTS AND FIGURES on how to conduct a warm air heating dealership will be presented at the two day convention scheduled by the National Warm Air Heating and Air Conditioning Association for November 30 and December 1 at Hotel Statler, New York City. The association is using some of the industry's finest talent to bring essential information to the dealer. Suggestions will be given for coordinating research data, application, business management and marketing techniques that will help link the dealer, manufacturer and wholesaler in an all out industry effort to make 1956 another record breaking year.

Central residential cooling will receive a fair share of attention when D. R. Bahnfleth makes his report on this subject on Thursday, December 1. Dealer H. E. Owens, East St. Louis, Ill. will tell about his formula for making a small business profitable. How to use the service department to increase sales will be explained by Russell F. Swett, Springfield, Mass. dealer who has used this method to promote better customer relations and develop favorable publicity for his company.

Other dealers scheduled to be on the program are R. P. Johnsen, Chicago; Martin Schaar, Milwaukee; and James H. Winters, Nashville, Tenn. These community minded dealers will form a panel moderated by R. V. Main to present the highlights of their local association activities and will explain how, by pulling together, local dealers are able to become a major influence within their trading areas.

Wholesalers will contribute the results of their latest dealer educational programs and show that cooperation between manufacturer and wholesaler and between wholesaler and dealer will develop greater selling impact, business efficiency and long range security for all segments of the industry. This data has been accumulated by W. H. Bowe, Jr., National Heating & Airconditioning Wholesalers' association, and is scheduled for Wednesday afternoon, November 30.

Manufacturers have lined up their market research departments to present the latest information on market potentials for 1956 through 1965. Much of this data will be given by

(*Continued on page* 22)

Carlough Asks: How Will Sheet Metal Workers Fare Under CIO-AFL Merger?

EDWARD F. CARLOUGH, general secretary-treasurer of the Sheet Metal Workers' International Association, was one of the speakers at a recent meeting of CIO and AFL officials held in Chicago. Mr. Carlough, speaking on the subject of the proposed constitution and the merger between the CIO and AFL, drew attention to the problems created by unifying unions in the metal production, fabrication and erection fields. He pointed out that the Sheet Metal Workers' International Association has been developing organization programs on the fabrication front and has made substantial progress in that endeavor. He pointed out also that sheet metal journeymen who have served their apprenticeship in the trade and have proven themselves are receiving good wages in the fabrication field.

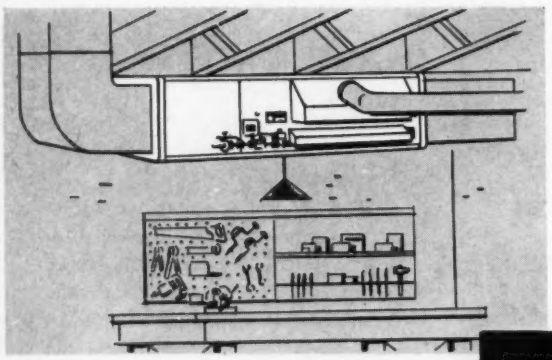
Mr. Carlough said he was apprehensive that the high wages and the conditions which have been won by sheet metal workers might be jeopardized by unifying with organizations in the production field. His observations were directed more toward the trends and dangers of the course of action being pursued than to any specific section of the proposed constitution. He said that he thought it incumbent upon the International association to raise a warning sign at this time as the merger period grows nearer.

Sharp Increase in Apprentice Registration

APPRENTICE registrations for the first half of 1955 rose sharply above those for the preceding six month period according to a report issued by the U. S. Department of Labor's Bureau of Apprenticeship. Bureau registration figures show that 162,690 apprentices were in training at midyear, an increase of 4015 over the figure for last December 31. Favorable economic conditions, are credited for the upward trend in apprentice registrations.

NEW from CRANE

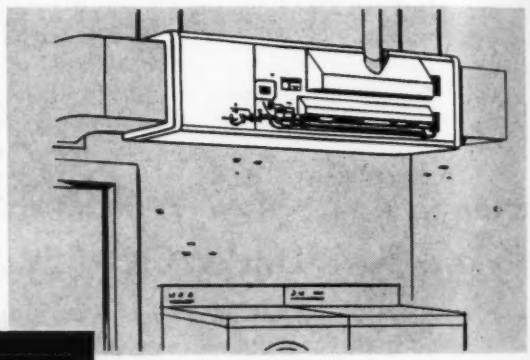
Horizontal Gas Fired Furnaces



Burner, air discharge duct, blower, air intake, and flue pipe can be located on either end of the furnace for more flexibility in installations.

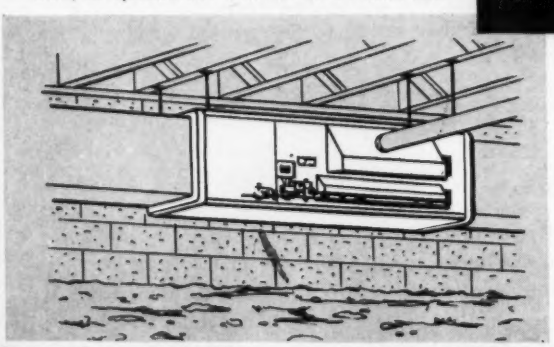
By suspending Crane Horizontal Furnace from floor joists in a crawl space or conventional basement, all upstairs floor area is free for other uses.

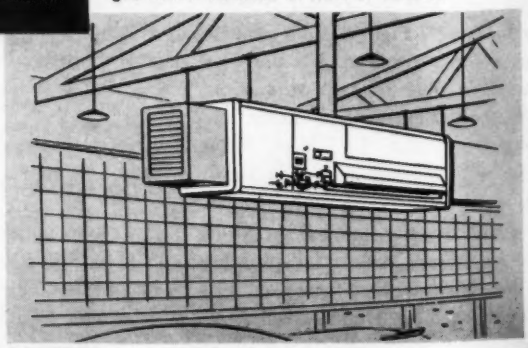
DESIGNED FOR ENDLESS VARIETY OF SPACE SAVING INSTALLATIONS



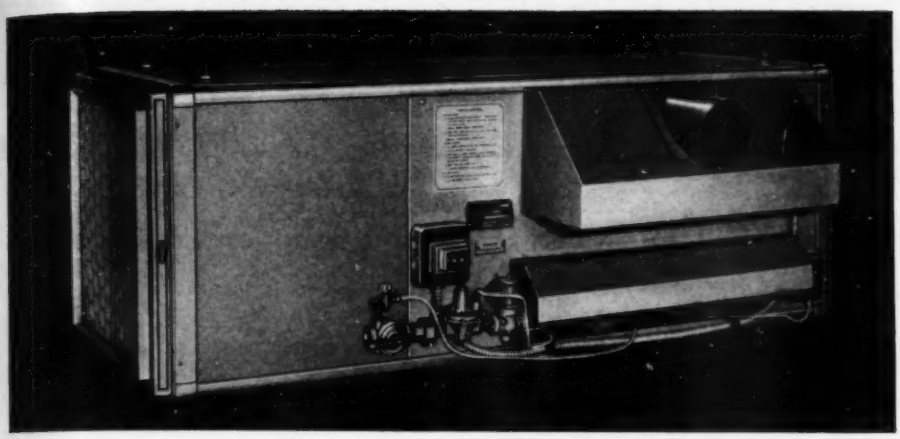
Scale comparison of 100,000 Btu. input unit shows how little space is needed for installation in utility room, hallway, or on a service porch.

A space-saver for stores, showrooms, churches, schools and other public buildings. Sketch shows gas burner installed at front of furnace.





CRANE



New Model Y-100-E Gas Horizontal Furnace with 100,000 Btu. input rating. Other models available soon with 80,000, 120,000 and 140,000 Btu. input.

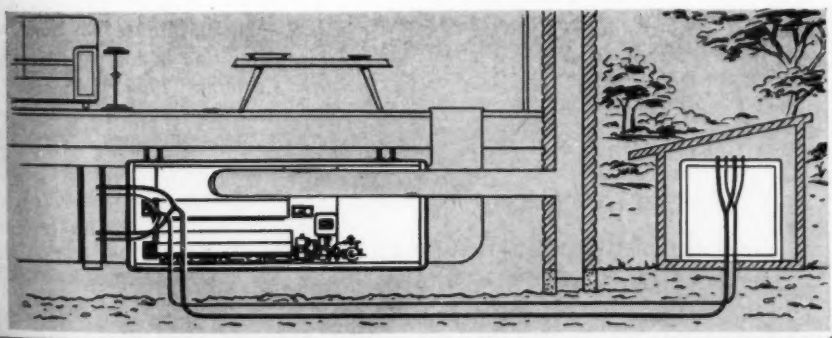
for home and commercial installations

Completely assembled and wired... these compact units are priced low for volume sales

Now you can cash in on the growing demand for space-saving heating installations with the new Crane Horizontal Gas Fired Furnaces. Exceptionally compact, these new forced air units can be suspended from above or mounted from beneath in attics, crawl spaces, utility rooms, basements, garages . . . wherever floor space is at a premium. And they are as easy to handle as they are to sell. Completely assembled and wired at the factory, the units are shipped with burner and electrical controls in place, ready for speedy connection to the gas-supply pipe and 110-volt electric lines.

The utmost flexibility for installations is just one of the features of the Crane Horizontal furnaces. Rigid mounting can be made at top and bottom. Gas burner installs from either side—at front or back. The vent pipe can be taken off horizontally or vertically.

See your Crane Branch or Crane Wholesaler now for all the details.



EASILY ADAPTED FOR LOW-COST YEAR 'ROUND AIR CONDITIONING

The sketch shows how the Crane Horizontal Furnace can be installed with remote type summer cooling system for low-cost year 'round air conditioning in the home. Cooling coil is installed in air discharge duct of furnace. Air-cooled condenser is located out of doors.

CRANE CO.
General Offices: 836 S. Michigan Ave., Chicago 5, Ill.
VALVES • FITTINGS • PIPE • KITCHENS • PLUMBING • HEATING

CRANE STARTS ITS SECOND CENTURY OF QUALITY
Founded July 4, 1855

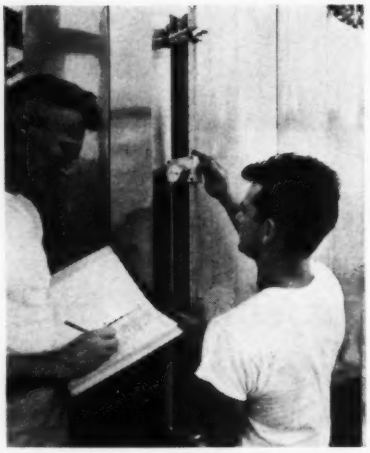
(*Continued from page 19*)

University Reports Findings Of Metal Curtain Wall Study

"CURTAIN WALL construction is suited to many smaller buildings and not just big city skyscrapers, and within the next 10 years this type of construction will be seen in many small towns." This is the prediction of Professor Robert W. McLaughlin, director of Princeton University's School of Architecture, who bases his conclusions on the results of two years of intensive research on the use of metal walls for buildings. The research project was sponsored by the committee on stainless steel producers of the American Iron and Steel Institute. Richard E. Paret, stainless steel specialist for the institute, in accepting a report of the study, pointed out that while sponsored by stainless steel interests, the report is exclusively the work of Princeton's independent researchers, and deals with competitive materials as well as steel.

Advantages of curtain wall, according to the report, include light weight of the panels, increase of usable floor space provided by the thin wall sections used in curtain wall construction, and speed of erection.

Commenting on the study, Mr. Paret stated that "those fabricators who stand ready to offer the greatest cooperation to the architects and builders of tomorrow's metal walled buildings are the ones who will benefit the most." He pointed out that there are many technical problems to be overcome, a number of which are outlined in the Princeton report. Solving these problems, he said, will require close cooperation between all parties concerned, and designers and builders will rely heavily on the experience of the metalworking industry. "Many fabricators have hesitated to enter this field," he said, "largely because of unfamiliarity with its requirements." He explained that in many cases the fabricating equipment required to form metal curtain wall panels need not be huge or elaborate. One curtain wall design proposed in the Princeton report, he pointed out, uses a standard standing seam type joint — which can be formed on a simple press brake "found in virtually every metalworking shop."



MEMBERS of Princeton University's research project team use a specially developed profile meter to measure vertical deformation in a sample metal curtain wall

Columbus Dealers Take Advanced Courses

A TWO DAY advanced course for warm air heating-air conditioning dealers in business management has been scheduled for November 21 and 22 at Ohio State University, Columbus. The training program is sponsored by six Columbus area wholesalers and one from Mansfield, O. All are members of the National Heating and Airconditioning Wholesalers association.

Expect 20,000 Visitors At ARI Exposition

SOME 20,000 members of the air conditioning and refrigeration industry or persons in other industries who have an interest in these fields are expected to attend the 9th Air Conditioning & Refrigeration Exposition, to be held November 28 to December 1 at the Auditorium, Atlantic City. Greeting these visitors will be approximately 3000 engineers and executives, drawn from about 250 exhibiting companies. Displays will cover approximately 88,000 sq ft of space.

Year 'round residential air conditioners will be on display as well as room conditioners, heat pumps, air handling units, air washers, cooling towers, and mechanical dehumidifiers. Other heating and air conditioning products scheduled for display are belts and pulleys, centrifugal blowers, coils, various types of controls including heating and air conditioning, and humidistats.

NWAHACA Target – Dealer Problems

(*Continued from page 19*)

K. L. Wilson, Minneapolis-Honeywell Regulator Co., in his paper *Heating and Cooling in 1965*. The market for non-residential warm air heating and its related profits will be explored by L. S. Redford, Jackson and Church Co. Mr. Redford will point out how schools, churches and office buildings are a "natural" for the industry's products and know-how.

The way to be sure of obtaining a larger share of this non-residential heating market will be explained by P. C. Kosch, Bryant division of Carrier Corp., in his presentation *Better Business Through Dealer Development Training*. He says that sales training and merchandising are the keys that unlock the doorways to greater sales volumes.

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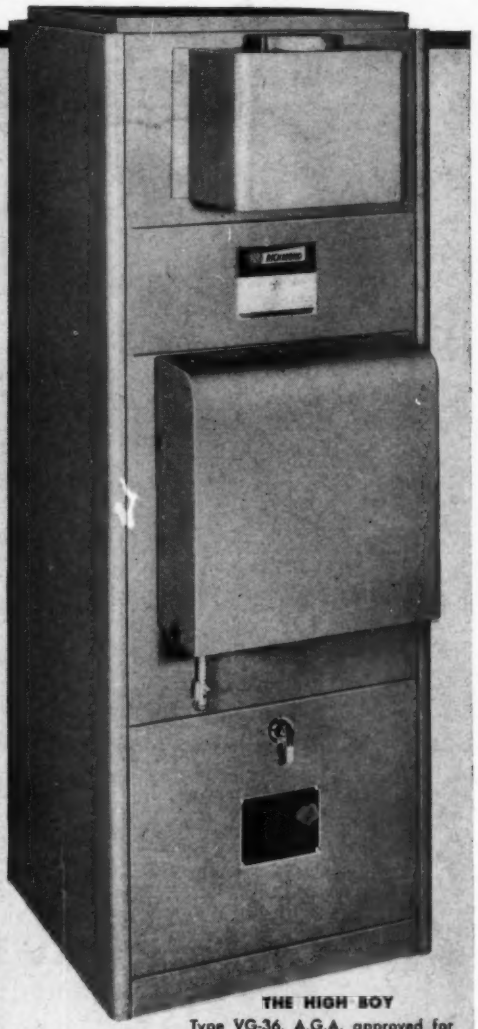

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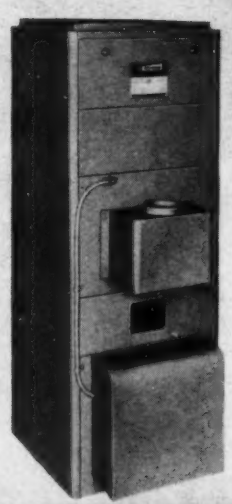

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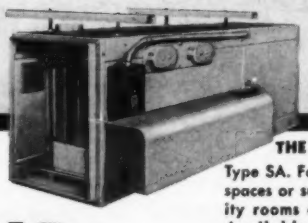

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. . . a competitively priced unit with important features to boost your sales

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4. **BLOWER** — suspended from division panel. Centrifugal type with multi-blade wheel. Large size (13"), permitting slower, quieter operation.
5. **INSULATION** — corrosion-resistant panels lined with heavy spun glass which is aluminum foil faced.
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This latest addition to Mueller Climatrol's Suburbanaire line, the Type 117-125, is a versatile multi-application unit. It meets the requirements of either a lowboy or a highboy unit in basements, utility rooms, closets — for perimeter, conventional small-pipe or other installations. But here are the important features that make it a sales booster:

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98th Anniversary

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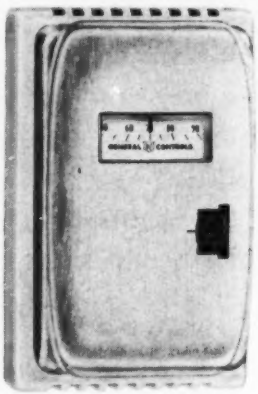
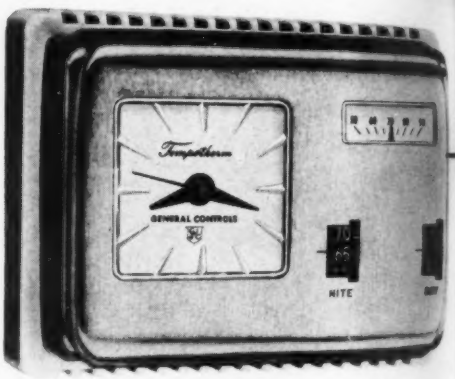
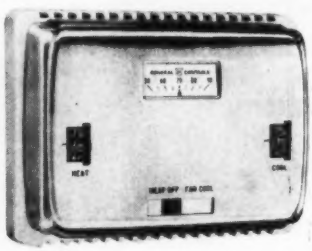


T-70 Standard Thermostat ... quick response, snap action type with flush-set roller dial. Built-in heat anticipation. Stainless steel face plate eliminates "tell-tale" fingerprints.



T-270 Tempotherm ... combination clock thermostat which switches from day to night temperatures absolutely automatically. Set it once like a clock —then forget it. The thermostat does the rest.

T-231 Air Conditioning Thermostat ... provides single-point control for combination heating and cooling systems. Features dual mercury switch type thermostats ... available with either single or two-stage operations.



Every one of these important B-50 components has established itself in its particular field as an outstanding performer. Each has been selected time and again for inclusion in a control system as an outstanding sales feature—a guarantee of dependability, accuracy, and efficiency. With such a record of individual stars, these outstanding components leave no doubt that, in combination, they are unbeatable. That's why a custom-matched General Controls thermostat, valve, limit, safety and pilot indeed constitute a "dream team" for the ideal 24-volt gas heating control system.

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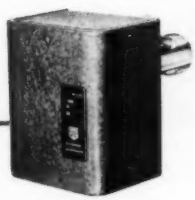

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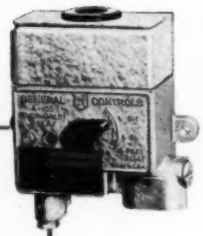
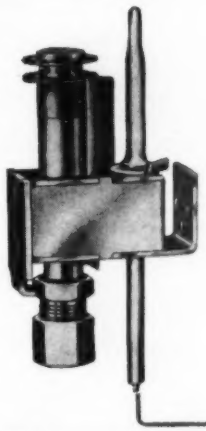


A-100 Thermopilot Relay . . . single couple design with manual or automatic reset. Contacts open when pilot flame goes out, automatically close when it is restored. Also available in *100% safety shutoff* models.



260 Pilot Burner with 2600 Thermocouple . . . famous General Controls Snorkel design passes all primary air through pilot flame to incinerate dirt and lint, and maintain pilot efficiency.

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BARBER COLMAN

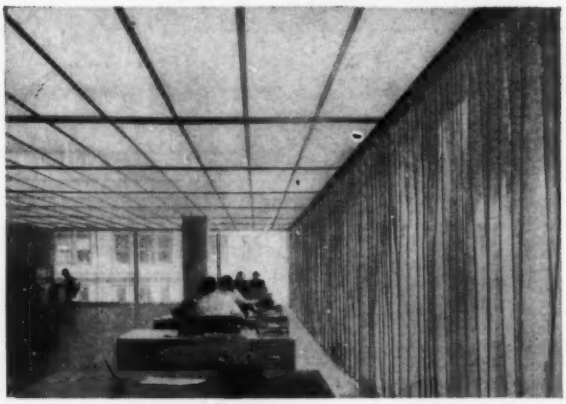
uni-flo Engineered Air Distribution

High velocity air distribution one of advanced features in Manhattan "glass-box" bank

Photos by Ezra Stoller

"A showcase for banking" is a vivid picture phrase describing this unusual new Fifth Avenue Office of Manufacturers Trust Company in New York City. Skilled professional craftsmanship has created a structure unlike any other financial institution in the world. In its creation, the designers have employed most recent developments in structural and operational techniques. Among them is the space-saving high velocity air distribution system, using the Uni-Flo High Velocity Air Valves to supply conditioned air quietly, effectively for comfort of patrons and employees.

Architects: SKIDMORE, OWINGS & MERRILL. *Mechanical Engineers:* SYSKA & HENNESSY. *Air Conditioning Contractor:* BAKER SMITH, INC. *Interior Design Consultant:* ELEANOR LEMAIRE.



Uni-Flo Rectangular Diffusers are so inconspicuous they are practically invisible in this third-floor office. Mounted in aluminum strip, diffusers lead directly from air valves installed above luminous ceiling panels. Individually adjustable diffusers simplify system balancing.

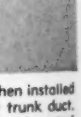
Like a modern showcase, the interior of Manufacturers Trust Company's office gleams with light on a rainy night. Huge 10x22 foot panes of plate glass face the second floor mezzanine. Unusual air conditioning problems posed by the glass walls were solved satisfactorily.

No fixed teller positions is a new idea in commercial banking. During busy hours, tellers roll mobile currency buses along the line to make room for extra help. Uni-Flo Rectangular Ceiling Diffusers blend with modern luminous ceiling construction providing inconspicuous air distribution.

One Uni-Flo High Velocity Valve can serve several diffusers when installed at a low velocity branch duct take-off from a high velocity trunk duct. Or a "package" is available, consisting of an air valve, sound control chamber, and single diffuser.

. . . get reliable information and performance data from the pioneer in high velocity systems!

Phone nearby Field Office
or write us for your copy of Uni-Flo High Velocity Catalog No. 6598. Fully illustrated manual on high velocity applications and techniques.



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Washington Letter

No Letdown in Building Seen

By Arnold Kruckman

Trends such as expanding economy, reflection of the high postwar marriage rate, remodeled housing and concentrated building promotions should offset any slack in construction brought on by tighter credit and other limiting factors

THE HOUSING BILL enacted during the recent session of Congress contains a section devoted to urban renewal which the federal government and a group of national non-government organizations have made the target for a special drive. Early in October a task force left Washington to visit ten cities across the country. The group is headed by S. Howard Evans who represents the urban renewal division of the Housing and Home Finance agency and the Federal Housing Administration; the others are Charles T. Stewart of the National Association of Real Estate Boards; Mark Saber of the National Association of Home Builders and James F. Steiner of the National Chamber of Commerce. It appears to be the object to supply the communities, which will get together in the central cities visited by the task force, with practical information on the manner in which they can negotiate the mortgage loans for urban renewal under the terms of the recently enacted law. The men who come from Washington anticipate cooperation from over 25 major trade, civic and economic groups in making their visits. It is expected the dissemination of practical information and demonstrations of how the purposes of the law can be achieved will give extraordinary momentum to building and construction of all kinds throughout the country. The group plans to be on tour at least a month, possibly until Thanksgiving or Christmas.

Push Home Improvement

What this task force is doing is related to the Operation Home Improvement drive which is being handled by an organization with F. Stuart Fitzpatrick, manager of the National Chamber of Commerce Construction and Civic Development department as co-ordinating chairman. The plan was launched jointly by the National Chamber of Commerce and the National Association for Real Estate Boards early this year for the purpose of making 1956 the biggest home improvement year in history. Operation Home Improvement includes cooperation on the part of the National Association of Home Builders, National Retail Lumber Dealers association, Producers Council, National Electrical Contractors association, United States Savings and Loan league, Portland Cement association, National Lumber Manufacturers association and forty other building material producers and equipment manufacturers. HHFA and FHA and other government agencies are represented in the group and will take part in the drive in an important manner. The plan is to carry on the campaign throughout 1956. It is to be financed by associations and manufacturers.

Rising Economy Boosts Demand

The urban renewal program alone is considered to represent a billion dollar a year potential, and estimates of requirements to eliminate city blight have run as high as $10 billion in ten years. A recent joint survey by the departments of commerce and labor placed the construction needs of state and local public works at $200 billion during the next ten years. The head of the New York stock exchange recently predicted that industry will have to spend $375 billion on construction by 1965 to keep in step with the demand of expanding economy. During the first eight months of this year new construction was 13 percent ahead of the same period last year. For the full twelve months the volume of new construction is expected to reach $42 billion — about $4 billion more than the record level of 1954. The total volume of construction, including maintenance and repair, is estimated at $58 billion for 1955. This year will set a new all time record for the dollar value of private home building. The total is set at $14 billion which is about $2.5 billion higher than the record in 1954, and more than $3

WASHINGTON LETTER–

(Continued from page 29)

billion higher than the 1950 record. Most Washington specialists expect the 1956 private home building dollar volume will be higher than in 1955.

Prices Offset Lower Volume

It is anticipated private starts in 1955 will fall about 50,000 short of the 1,352,000 unit record set in 1950; and next year the number of private starts is expected to fall 50,000 or more below this year's total; in other words, 100,000 below the 1950 total. But the higher prices are more than offsetting the smaller number of units. Experts agree the average single family house now costs about $2,500 more than it did in 1950—partly because building costs have gone up, partly because today's house is bigger and better. They all expect the trend to higher prices will continue into next year because costs are still rising, and more and more builders are upgrading their homes to tap the growing market among families who have rising incomes which permit them to purchase more expensive houses.

More Buying Power Seen

It is expected credit will be fairly tight in the early part of 1956 and that it will be less easy to obtain developed land with water and sewers. These factors are expected to hold home building down. But on the other hand it is pointed out that the number of families who can afford to buy houses is increasing more than twice as fast as the total number of households. The prediction is quite general that the number of families who can afford to pay at least $12,500 for a better house next year will increase by as much as 1.5 million; and the number who can afford to pay $18,000 for a house will undoubtedly increase by 500,000.

Tax reduction is the principal target politically at the next session of Congress and in the states and is regarded by many as a sure thing, barring an unexpected war. On the other hand wages are expected to increase next year—all of which Washington regards as basic reasons for a rise in purchasing power well above the average. The financial agencies of the government think rising income means increased savings and that it will give the mortgage lending institutions—the mainstay of housing credit—more funds. In 1956 the savings are expected to be far greater than in 1955.

Post War Marriages Are Factor

Even if census is cautious in its estimate on the net of new households formation, Washington generally expects the number of marriages to be higher in 1956 than it was in 1955. And it is pointed out that a substantial number of sales of new homes are made to those who have been married several years, for which reason the housing market is expected to continue to benefit by the higher number of marriages from 1945 to 1953.

The migration from the farms to the cities continues. Since 1950 farm households have been dwindling at the rate of about 150,000 a year. Census figures also reveal that of the 5 million persons who move each year from one state to another, most of them go to the fast-growing states where there is proportionately little existing housing available. The figures also reveal that about 24 million people each year move within the same state, most of them from the inner part of a city to its rim and other outer locations. Another very interesting fact that seems to be overlooked generally is that more and more families are having their third and fourth babies. This fact naturally increases the demand for houses planned in locations to meet the needs of the youngsters. The social agencies of the federal government have come up with the interesting observation that more jobs, and more job opportunities, higher wages, wider spread home ownership, social security, pensions, annuities and other fixed income sources are making possible independent occupancy dwelling by those who, only a few years ago, had to double up.

Used House Market Grows

There is of course a very marked change in the market for housing for Negroes. The two major aspects are the spectacular improvement in the income of the Negro and the tremendous migration from farms and small towns to central cities. There is no question that there is an expansion in Negro areas. It does not yet mean any substantial amount of new housing construction, but it is providing a great new supporting market for good used houses. This fact is looked upon as being as important in the sale of new homes as an active used-car market is to the sale of new cars.

They tell us that the same thing is happening in the home building industry that has been happening in the automobile industry. There are striking changes in style and design which attract and please the eye and make the home owner proud of his property. Houses are built with much more devotion to convenience in arrangement and labor-saving devices in order to eliminate domestic help and to accommodate the wife who also has a job elsewhere. Over and over the financial agencies of the federal government remind us that while it will not be as easy as it was from 1954 to early 1955, mortgage credits will be ample to support the anticipated bigger volume of building and other investments in construction. It is reiterated that mortgage money is likely to be tight during the early months of 1956 but that thereafter there is bound to be relaxation by reason of the various

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One Model #CB-200, on natural gas has input rating of 75,000 to 200,000 Btu. Pipe size ¾". A.G.A. approved.

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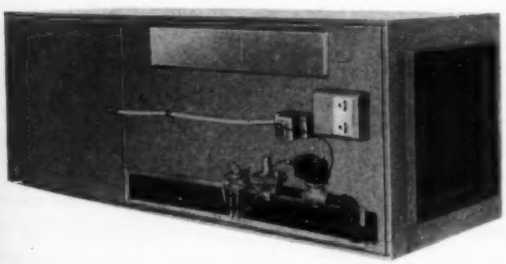

The Horizontal model can even be installed under the house, or for industrial heating can be installed on shelf or balcony; used as a suspended heater or as a duct heater.

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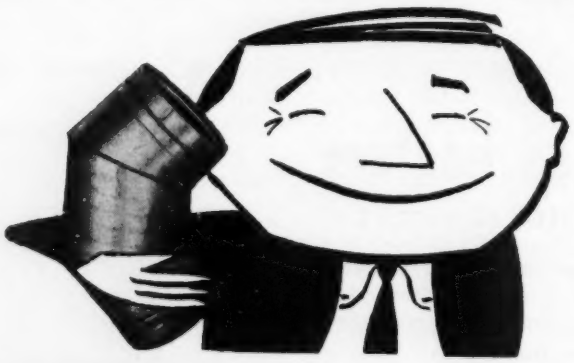

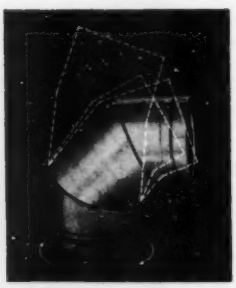

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forces inherent in the accumulation that will make substantial funds available. Emphasis is placed on the fact that the outlook, both nationally and internationally, seems to be optimistic; and we are constantly told to bear in mind there are still millions upon millions of families living in houses that are not up to standards they can afford. By the same token it is stressed that the vast number of structures that shelter the units of the economy—shops, factories, warehouses, stores, theaters and the other parts of the system—need improvement, can afford to be improved and will invest in improvements if the sales campaign for the purpose is focused intelligently.

Sheet Metal Figures Expected

Agencies such as HHFA, FHA, VA and BDSA, together with the non-government organizations devoted to the many fields of construction have teamed up to work on statistics and figures which will be issued in the near future to reveal for the information of the sheet metal contractors and others, what is used of the products of their fields in the various activities of construction in which they are engaged. These figures should be extremely interesting. It is understood they have been piecemeal heretofore but never brought together and articulated as a whole in such a study; for instance, the studies should show the number of warm air heating installations per thousand structures in the various classifications of the structures; and the number of residences, schools, institutions, shopping centers, industrial units and the various other types of buildings that use ductwork. One agency has a study using the figures of 1950 which show that builders of 600,000 houses used galvanized sheet metal in 550,000, aluminum sheet products in 40,000, and various other materials in 10,000.

The study under way will apply to industrial building which should continue strong in 1956. It will like-

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Gentlemen: Please rush me complete new catalog, price lists and discounts on the new 200 Series Side-Wall-Ceiling Grille.

Name .....

Company .....

Address .....

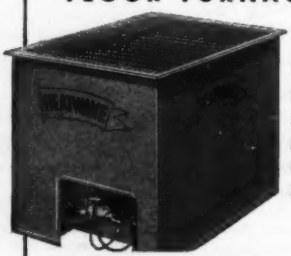
City ..... State .....

THIS IS THE JONES FAMILY BEFORE THEY WENT MODERN . . .
THIS IS THE HEATWAVE GAS FIRED FURNACE THAT CHANGED THEIR WAY OF LIFE . . .
THIS IS THE JONES FAMILY NOW . . .
THIS IS THE HAPPY HEATING CONTRACTOR WHO INSTALLED THE NEW HEATWAVE FURNACE!

PHOTO AT RIGHT ABOVE is the Heatwave Horizontal, for space savings installations in homes without basements; installs in attic, under floor, in service porch, attached garage, or may be suspended from joists in homes with basements.

If your business objective is twofold: to make more profit for yourself and to build a lasting clientele of satisfied customers, switch to HEATWAVE Gas Fired Floor Furnaces and Central Heating Systems! You can build additional sales and maintain goodwill with the HEATWAVE line. Every model is factory assembled, fire tested, ready to install, and has a 10-year factory warranty.

THE HEATWAVE FLOOR FURNACE



BTU Input:
27,500
35,000
50,000
65,000
75,000

At last a floor furnace that combines QUIET operation with efficiency, economy and long life!

HEATWAVE

Distributed By Outstanding Wholesale Supply Houses • Write or Wire • Get The Facts!

SOUTHWEST MANUFACTURING CO.

Subsidiary of the F. E. Myers & Bro. Co.

BOX 151 AURORA, MO.

WASHINGTON LETTER —

wise cover commercial building which also should continue to expand next year. And the study will apply to religious and institutional buildings including colleges, hospitals, schools, and all the structures that appear to be potentially in great demand. Public construction, which is expected to increase in 1956, also will come within the category of the study.

Statements Are Conflicting

A statement recently issued by the American Real Property Federation in Washington brought out the interesting fact that there are over 40 million owners of real property in the United States, including 23 million home owners, 8 million rental owners, 6 million farm owners and millions of other owners of business property. Congress officially has gone on record with the statement that tenants outnumber property owners, whereas the federation makes very clear that owners outnumber tenants. The federation statement also shows that the property and home owner pays the lion's share of local government and taxes.

Taxes in the Spotlight

Shortly before adjournment a survey was made among members of Congress to find out what they regarded as major issues in the 1956 campaign. With almost amazing unanimity, Congressmen who answered the poll ranked taxes as number one among 50 political campaign issues. Along with taxes most of those who made comments placed government economy. Next were farm price supports, prosperity and employment.

Former President Herbert Hoover recently summed up a controversial subject: "A large part of the wasteful methods in the government arise from systems of administration which were efficient enough before the fabulous growth of the federal executive branch by about fourteen times the size of 25 years ago."

NOW...A LOW COST WAY to Convert Warm Air Systems to Year-Round Air Conditioning

TYPHOON Convert-to-Cool

A SIZE FOR EVERY HOME! Typhoon now has available 2-3-5 and 8 ton *waterless* air-cooled units to meet the price needs and cooling requirements of every residential application. (These same units are also designed for commercial application.) Great engineering means sales will stick. Finest quality components. Fewer service headaches.

Tremendous New Market Over 11 million homes throughout the country have warm air furnaces. Every one is a hot prospect for Convert-to-Cool!

Air-Cooled Eliminates water supply and drainage problems and extra plumbing costs. Assures operation during water shortage!

TYPHOON
AIR CONDITIONING

TODAY—wire, phone, or use the coupon for full details!

TYPHOON AIR CONDITIONING CO., INC.
505 Carroll Street • Brooklyn 15, New York

Specialists in Air Conditioning Since 1909

Typhoon Air Conditioning Co., Inc. R-1
505 Carroll St., Brooklyn 15, N. Y.

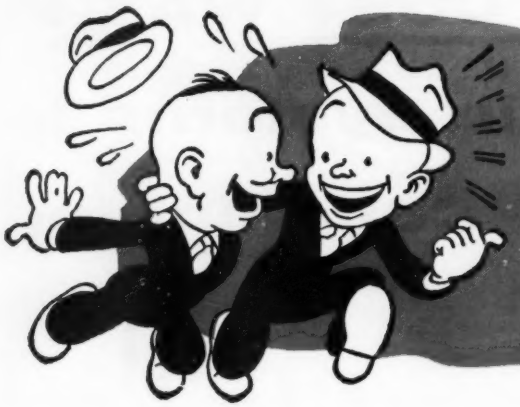
I'm interested in selling the Typhoon Convert-to-Cool system. Please rush full details.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ ZONE____ STATE____



Idea Exchange for Dealers and Contractors

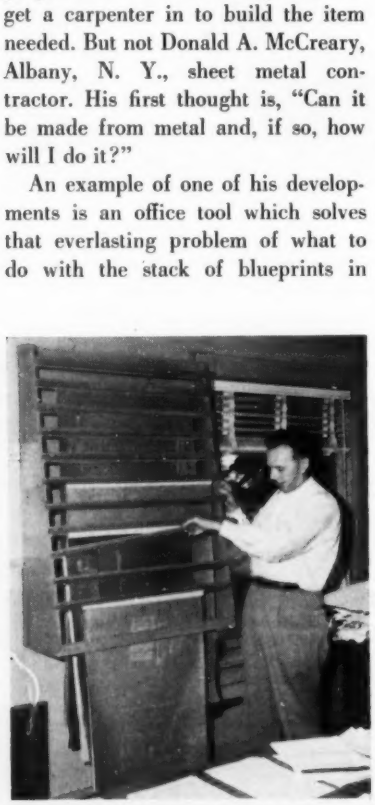
Metal Blueprint Rack Saves Shop Time

. . . by placing important plans at contractor's fingertips

USUALLY WHEN a new shelf, book rack, table or some other office fixture is needed, the first thing most people do is reach for the phone and get a carpenter in to build the item needed. But not Donald A. McCreary, Albany, N. Y., sheet metal contractor. His first thought is, "Can it be made from metal and, if so, how will I do it?"

An example of one of his developments is an office tool which solves that everlasting problem of what to do with the stack of blueprints in which the one you want is always buried. Mr. McCreary designed a blueprint rack that will hold eleven sets of plans, usually the prints most in use during normal operation.

RACK AND PLAN ROD details demonstrate application of the shop tool which is constructed of 0.040 gage aluminum and accommodates eleven sets of blueprints



REMOVING A SET of blueprints from the rack and plan holder he designed is Donald A. McCreary

Blueprints are held in place by tension on the curved part of the plan rod — punching or drilling are not necessary. The three wing nuts and studs create enough pressure to hold up to 10 prints in each plan rod.

The dimensions of the plan rack are shown in the drawing. This rack is fabricated from 0.040 ga. aluminum. Plan rods are of the same gage metal. The shape of the plan rod is shown in the detail drawing.

The rack is easier to hang on the wall and the vertical supports are more likely to retain their shape if a back piece is used. Vertical side pieces are formed by bending the sheet metal to fold back even with the rear edge. Thus when the slots for the plan rods are cut into the vertical side pieces, the structural strength of the side piece is not weakened.

The bottom is held in shape by the horizontal retaining bar which also holds the blueprints within the limits of the width dimensions.

All corners and edges are rounded and a coat of lacquer retains the bright finish of the metal.

Add New Glamour to your heating jobs with Electronic Moduflow!

Thermostat outside the house
gives your customers luxurious electronic comfort

Now you can add glamourous new sales appeal to your heating jobs—install Honeywell Electronic Moduflow Temperature Control to highlight your heating plants!

Moduflow has been wonderfully redesigned to give it even stronger impact as a sales feature. Its new styling will add greatly to the decor of your customers' homes.

Electronic Moduflow is service-free, easy to install, *completely automatic*, and reacts with electronic swiftness. It makes all other control systems obsolete because it features an electronic thermostat *outside* the house that varies indoor temperatures as the weather changes. This is the ultimate in home comfort!

Electronic Moduflow is ideal for any house with an adequate heating or cooling plant! *And it assures a greater profit margin!*

See your Honeywell salesman or supplier right away for costs and availability . . . or write to Honeywell, Dept. AA-11-95, Minneapolis 8, Minnesota.

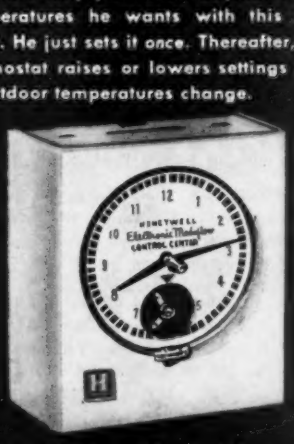
(Clock shown is primarily for utility room use. Deluxe burnished chrome, flush mounted models available for kitchen.)

New Outside "Weathercaster" Thermostat

With electronic swiftness, the Honeywell Weathercaster continually senses outside temperature changes and tells the indoor thermostat what adjustment is necessary to maintain perfect comfort.

New Inside "Golden Circle" Thermostat

Your customer simply dials the daytime and nighttime temperatures he wants with this beautiful thermostat. He just sets it once. Thereafter, the outside thermostat raises or lowers settings *automatically* as outdoor temperatures change.



New Electronic Control Center

This handsome new appliance-white clock is styled for the utility room or kitchen. It receives electronic signals from the indoor thermostat and adjusts the heating or cooling plant accordingly. In winter, it *automatically* lowers the temperature at night to save fuel, and raises it in the morning.

For heating or cooling

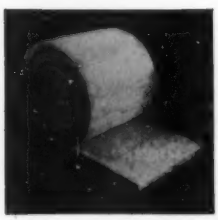
MINNEAPOLIS
Honeywell

Electronic Moduflow

112 OFFICES ACROSS THE NATION

How to kill three duct problems

with one insulation . . .



Thermal, acoustical and vapor barrier problems are "dead ducks" when you use ULTRALITE*, the long glass fiber insulation. Here's why: Due to its unique long glass fiber composition, ULTRALITE is the toughest, most resilient glass fiber insulation on the market, with a record of ten years of successful application. Because of this extra strength, it can be adhered to sheet metal and run through the brakes and shears at the same time the ducts are formed — without worry that it will tear, compress, or delaminate.

Ducts formed in this way are *completely insulated units*, ready to install on the job. They solve the noise problem without impairing the efficiency of the unit because ULTRALITE Duct Liner has a low air friction coefficient. The same insulation that soaks up objectionable sound also insulates the ducts against heat gain or loss. *No vapor barrier is necessary;* with the insulation on the *inside* of the duct, the duct itself becomes the vapor barrier.

Try this time-saving new method on your next job, and you'll be delighted with both cost and performance. But be sure to use ULTRALITE — the only flexible glass fiber insulation with a 10-year record of successful performance.

*Reg. U. S. Pat. Off.

NOTE

Should you continue to wrap ULTRALITE around the exterior of ducts for thermal protection, be sure to line the plenum and short supply and return ducts with ULTRALITE Duct Liner. Do so even on jobs where duct liner is not specified, and you will be well repaid, for this will make all the difference between an enthusiastic and a dissatisfied customer.

ULTRALITE is stocked locally in 57 cities. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon Insulations."

GUSTIN-BACON *Manufacturing Company*

GUSTIN gb BACON

Thermal and acoustical glass fiber insulations • Pipe coverings and fittings • Railroad gaskets and supplies

226 W. 10th St., Kansas City, Mo.

Luxaire®

...The BIGGEST QUALITY and Price Package ever offered for

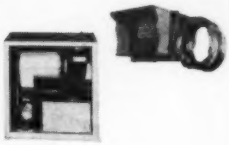
- **ADAPTABILITY**
- **FLEXIBILITY**
- **CONVERTIBILITY**

in Heating... Year 'Round Air Conditioning ...Summer Cooling

See our exhibit at the Air Conditioning Show. Space 526.

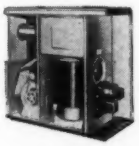
Basement-Utility Year 'Round Unit Equipped For Oil

Counterflow Year 'Round Unit Equipped For Gas



Air Cooled Remote, Summer Cooling Unit

Water Cooled Add-on, Summer Cooling Unit



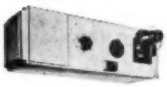
Basement Winter Air Conditioner

Counterflow Heating Unit

Utility Heating Unit

Gravity Furnace

Gas Fired Unit Heater



Horizontal Furnace

Incinerator with or without Gas Burner

Yet... Priced to Meet Competition

Most Units Approved to Burn Either GAS or OIL with Equal Efficiency

The BIG VOLUME LINE . . . the **really complete line** . . . is Luxaire!

Luxaire builds **only one line** . . . the best!

That's why **every Luxaire unit** is a competitively priced unit. That's why you can choose **the right type and size** of Luxaire unit for any installation . . . at a low competitive price. And that's why, when you install a Luxaire unit, you're sure of an excellent, trouble-free, less costly installation.

There's another BIG Luxaire BONUS, too!

Every Luxaire Oil Fired Unit, except horizontals, can readily, speedily and inexpensively be converted for gas. You need stock only one basic unit for either type of burner. If the gas permit is in question, you can completely install the unit only, now . . . install either gas or oil burner when the permit decision is made. And if you install the oil burner, you can make an extra sale . . . an extra profit, later . . . by converting the same unit to gas with a simplified, factory-packaged conversion kit.

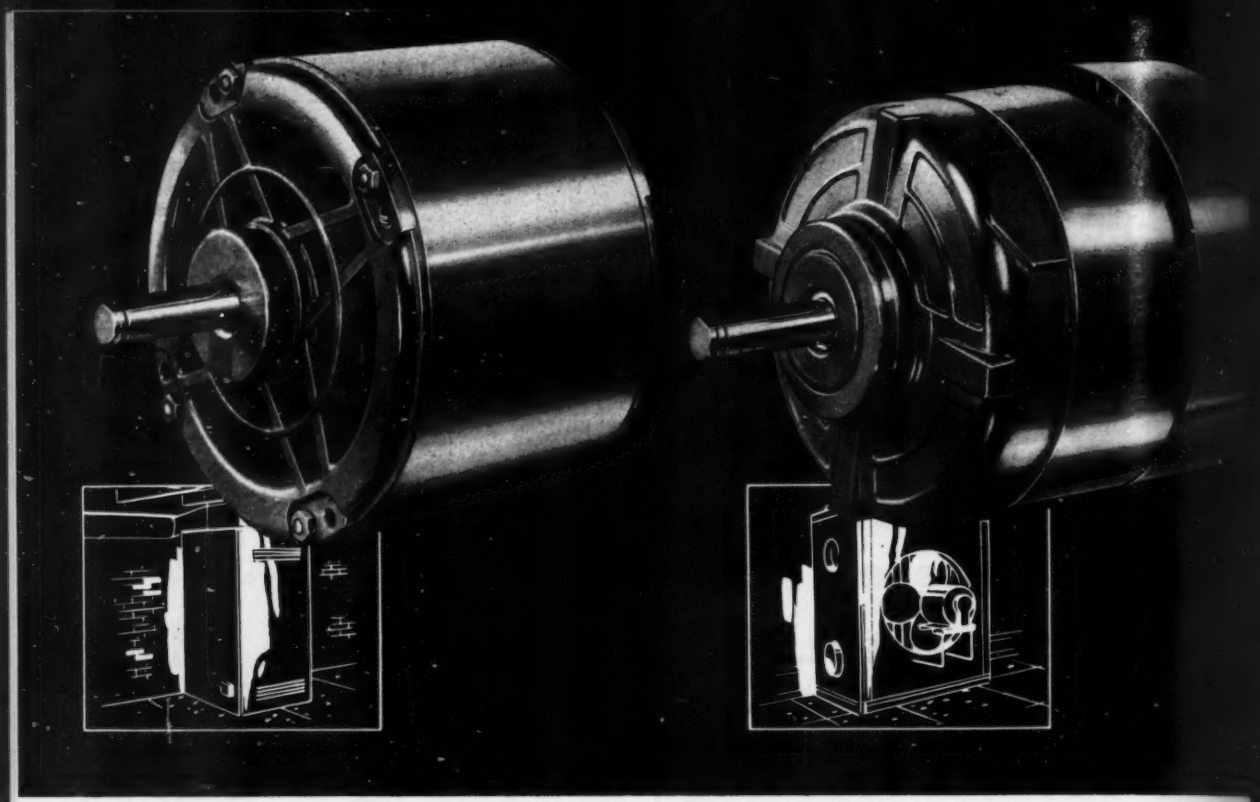
The BIG PAYOFF is with Luxaire!

See your Luxaire jobber. Get a line on the big, competitive Luxaire Line . . . with the BIG PROFITS **built-in!**

With Luxaire you have a unit to meet ANY specification!

THE Luxaire® C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO

HEATING & AIR CONDITIONING UNITS

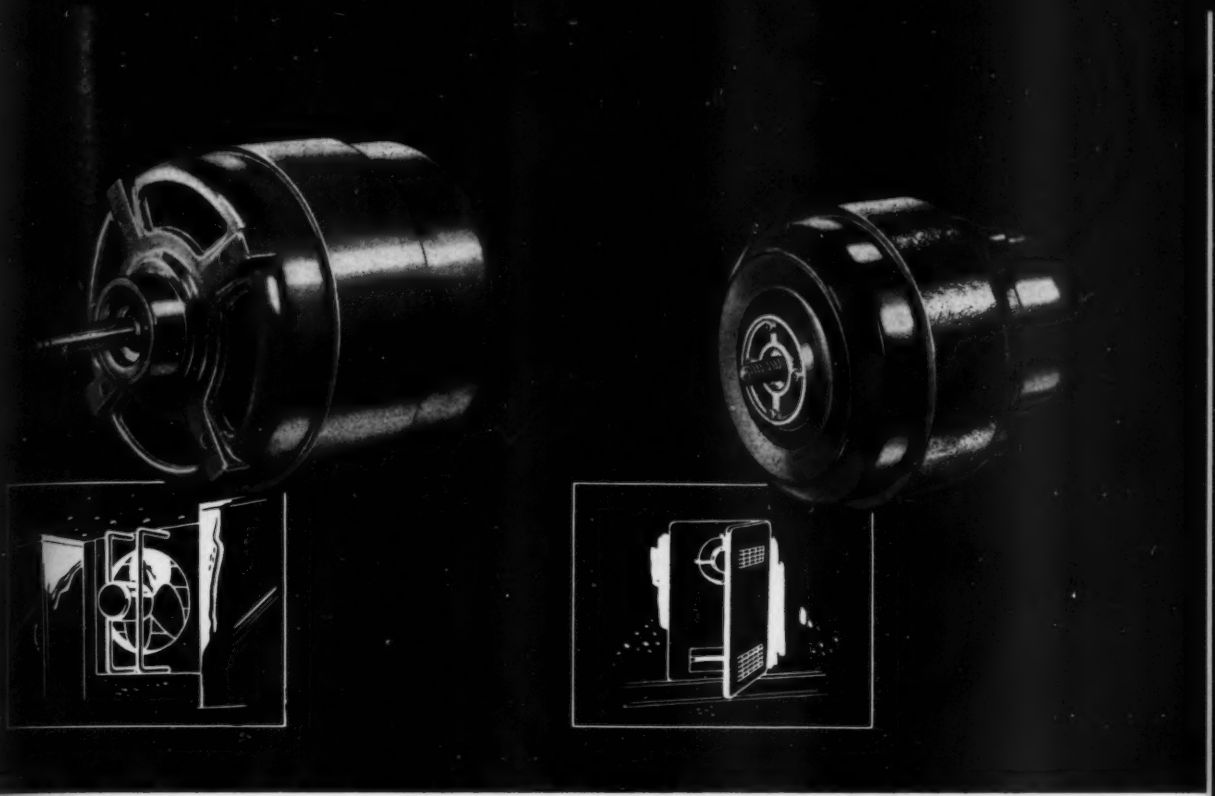


1/12 TO 1/4 HP for remote air conditioners, direct-drive furnace blowers up to 115,000 **BTU** output, roof ventilators, window fans. Open and totally enclosed models available; single rotation and reversible; 1050 and 1550 rpm.

25 MHP TO 1/12 HP for such products as large window fans, large unit heaters, small direct-drive furnace blowers. Motor can be supplied totally enclosed and totally enclosed fan-cooled depending on rating; 1050 and 1550 rpm.

Rating for rating, G-E shaded-pole

CREATIVE ENGINEERING—A WAY TO BETTER PRODUCTS— G-E motor application engineers are specialists in creative engineering. Working directly with your design people, they can often suggest new opportunities to streamline your products by taking full advantage of G-E shaded-pole motor features. Put them to work on your motor-application problem.



15 TO 35 MHP for such products as medium-sized unit heaters, small window fans, ventilator fans. Motor can be supplied totally enclosed fan-cooled for gas-fired unit heaters, and can be mounted from either end; 1050 and 1550 rpm.

1.5 TO 16 WATTS for such products as small unit and space heaters up to 74,000 BTU output. Motors are totally enclosed and of rugged construction. Shaft is threaded for direct connection of fan. Available in 1050 and 1550 rpm ratings.

motors are designed and built to keep your costs low, quality high

If you build air-moving equipment of most any type, there is a General Electric shaded-pole motor especially suited to your product. Information on application, types of enclosures available, superior construction features, and ratings are provided above. Now check other reasons why air-moving equipment manufacturers prefer G-E shaded-pole motors.

QUALITY FEATURES MEAN TOP PERFORMANCE

Long-life bearings—G-E shaded-pole motors bring you the benefits of sealed-in lubrication. Oil grooves in shaft provide positive lubrication of filtered oil to bearing surfaces.

Cooler operation—Improved ventilation of G-E shaded-pole motors results in longer life through cooler bearings and windings. Higher efficiency (lower heat loss) of 1/12- to 1/4-hp line simplifies provision for motor ventilation in your products.

Unit-bearing in smaller ratings and two-bearing design in 1/12- to 1/4-hp line each provide the optimum in compactness, quietness, and long life.

VERSATILITY MINIMIZES DESIGN COSTS

All-angle operation provided by sealed-in lubrication and advanced bearing designs permits mounting motors shaft up, down, or at any angle. All-angle operation permits you to make maximum use of space, cut product weight and save on material costs.

Three-way mounting is offered on most G-E shaded-pole motors: cushion end-rings, through-bolts, resilient cradle bases. Extra-high bases are also available to match your design needs.

FOR COMPLETE SHADED-POLE MOTOR SERVICE, including expert application help, contact your G-E Apparatus Sales Office. Write for Bulletin to Section 704-56, General Electric Co., Schenectady, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC

WHAT THE ASSOCIATIONS ARE DOING

PHIL RIES, president, Fox Valley Furnace and Sheet Metal Contractors' Association, offers a toast to other members of the association at the group's 22nd birthday party

RECALLING the early days of the association are (left to right) Burril Conover, Andy Lind, Clayton Evelien, George Bushman and Fred Nolting

Fox Valley Group Has 22nd Birthday

BIRTHDAY PARTIES usually are occasions for celebration. The Fox Valley Illinois Furnace and Sheet Metal Contractors' Association makes this occasion serve a dual purpose—past achievements are reviewed and plans for the future are discussed. Details of activities for the forthcoming 12 months are presented and then the celebration becomes an evening social hour.

On September 20 the association celebrated its 22nd birthday. Joseph Strotz was host, with president Phil Ries acting as toastmaster. Plans discussed during the business session included the establishment of a service school for employees designed to increase their efficiency in diagnosing equipment malfunctions and making repairs. Among the speakers to be obtained for the contractors' monthly meeting are to be authorities from the local gas and electric utility companies, a wholesaler, a heating engineer from NWAHACA, a manufacturer's cooling engineer, and a merchandising expert.

Kalamazoo Code Nears Completion

GLEN W. RYNBRAND of the Kalamazoo Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association, and A. Fred Madaus, mechanical equipment inspector for the city of Kalamazoo, have recently completed their work on a proposed heating and air conditioning code for the city and surrounding areas. The association reports that many national engineering and safety sources as well as local individuals were referred to for advice in preparing the code, which is designed primarily for the safety of the citizens. It is pointed out that for the main part the requirements included are of standard nature throughout the country and differ only slightly from the good practices now in force in most areas. Some innovations have been inserted where present practice does not fulfill the safety requirements needed or where such requirements have been badly abused or misused. It is also explained that the enforcement features are stronger than in the previous code. However, the primary value, according to the association, is that the code is assembled in such a way that any requirement may be quickly and easily located.

Copies of the code have been sent to all members of the group for comment and criticism before it is presented for adoption to governing bodies in the area.

SMCNA Discusses Travel Pay

TRAVEL PAY is the subject of a recent news bulletin of the Sheet Metal Contractors' National Association. The problem, according to the bulletin, is how to pay an employee for travel—in daily commutation—to jobs which lie outside the "no expense" zone specified in the local agreement and avoid violation of the overtime requirements of the Wage and Hour law and the requirements of the Internal Revenue Code.

It is pointed out that the recommendations in the bulletin are the results of consultations between SMCNA's labor relations committee and its attorney; the attorney for the Sheet Metal Workers' International Association; the Wage and Hour division of the Department of Labor; the Solicitor General's office; and representatives of the Internal Revenue Bureau.

"The Fair Labor Standards Act," SMCNA says, "requires the payment of at least time and one-half at the regular rate of pay for hours worked in excess of 40 hours in the work week. 'Hours worked' has been interpreted to include travel time to and from the job if travel is paid for at an hourly rate and thus is recognized by the parties as hours worked.

"Heretofore 'travel time' has not been thought of as 'work time' and pay for travel has not, usually, been considered as wages and no deductions for income tax have been made by most employers. The problem of withholding for purposes of income tax and social security is a substantial question.

"Internal Revenue allows the employer to 'expense'

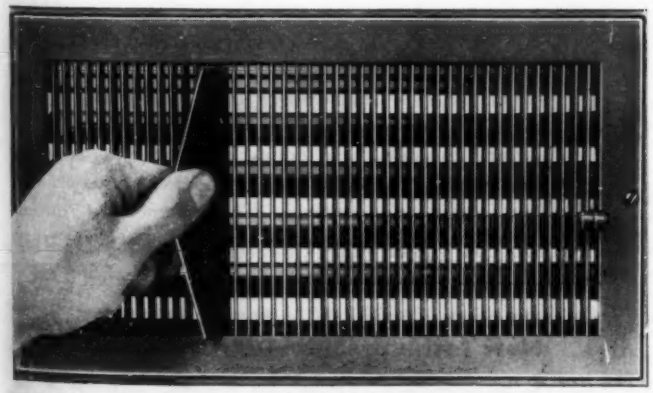
"ALL AMERICAN" STARS
In PERIMETER and CONVENTIONAL
A-C HEATING SYSTEMS

NEW No. 1000 U.S. SUPER-BASE DIFFUSER

You give your customers the utmost in perimeter heating satisfaction when you install the brilliant new No. 1000 U.S. *Super Base Diffuser.* Its *neat, modern* Appearance Blends into the surroundings in any room while its greater free area and minimum resistance creates a Perfect *Diffusion* and Distribution of Quiet Warm Air. Also Adaptable for Cooling.

You Save on Installation Cost, too. No basement pipe dampers are needed. Though they may be used. Patented Setlock Permits System Balancing at the register by *one man.* No. 1000 Base Diffusers can be installed at any stage of new construction, or against baseboards in old homes.

Specify U.S.—the right line for every job.



No. 256 U.S. A-C REGISTER

For *Peak Efficiency* in conventional residential and Commercial Heating and Cooling Systems the U.S. No. 256 *multivalve register* has never been equalled.

Air *input* can be from *any* direction — Bottom, Top or Rear. Air *Output* can be directed left, right, up, or down by Setting the Multiple Valves and Resetting Grille bars. It is THE *best* in *performance, appearance,* and *efficiency.*

U.S. provides the most complete line of all! Write for Catalog No. 55-6.

UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

SOLD BY LEADING JOBBERS FROM COAST TO COAST

this travel compensation so long as it is reasonably arrived at, in the aggregate, both as to withholding tax and social security. Revenue Ruling 190, C. B. 1953-2, page 303, overrules S. S. T. 413.

"Employers should pay particular attention to the requirement of filing Form 1099 on all employees receiving reimbursement for travel, be it daily commutation or out of town. The question of whether or not employers should be concerned with their employees' adherence to the tax law is one of individual employer-employee relationship. The contingent liabilities and bookkeeping duties on employees should be considered, however, when travel expense is being negotiated since one of the attractive aspects of negotiated travel expense is the assumed tax free character of the compensation."

CHICAGO AREA wholesalers discuss plans for dealer management school. From left are Elmer Bertossa, Ed Mott, Wilbur R. Bull and Charley Bennett

Plan Dealer Management Schools

CHICAGO AREA MEMBERS of the National Heating and Airconditioning Wholesalers held a committee meeting on September 28 to plan a dealer management school. The school will be conducted by faculty members of one of the colleges located in Chicago and will be held early in 1956. Forty-two dealers will be invited to attend the two day event. The names of the dealers to be invited will be submitted to the program committee, who will issue the invitations.

Part of the cost of conducting the school will be borne by the dealers attending through a nominal registration fee. The school program will be based along lines used at previous schools conducted at Ohio State University, Columbus; Xavier University, Cincinnati; and Michigan State University, East Lansing. Subjects to be covered include job costs, estimating, markup, profit, proposal forms, financing a business operation, customer contacts, dealer insurance, sales and property taxes, and public relations for retailers.

Housing will be provided at nominal cost to out of town dealers. The evening before the school begins is given over to an informal meeting where faculty members and cooperating wholesalers will present a detailed description of the program.

Milwaukee Group Discusses "WHAM"

ROBERT S. SCHMIEDER, secretary of the Sheet Metal Contractors' Association of Milwaukee, reports that at the group's last meeting the WHAM program came in for considerable discussion. According to present plans, the association will run a full page ad for 13 weeks in the Milwaukee Journal, then repeat for another 13 weeks if it is deemed advisable. About a fourth of the page will be in the form of editorial matter and messages to the public, with the balance of the page being taken by the members of the association who participate in the program. Association members who are manufacturers and jobbers of heating equipment and supplies will participate by having their names mentioned.

Cites Value of Regular Attendance

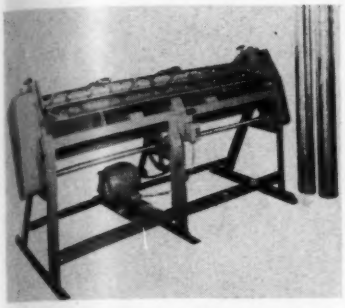
RICHARD W. FRIDAY, secretary of the Master Sheet Metal, Furnace and Roofers Association of Rochester, N. Y., urges better attendance on the part of the group's membership. In a recent bulletin Mr. Friday says, "Contractors everywhere are complaining about the low prices being quoted by competitors and the high cost of labor, but are giving little thought to their association which can give them so much help in meeting these and similar problems. They should know that regular attendance at association meetings is a 'must' for successful operation of any business." He points out that most successful businessmen "not only belong to their trade associations but attend all meetings. They know that the information they get at these meetings more than repays them for the time spent."

New Technical Secretary for ARI

J. H. BERGHEIM, mechanical engineer formerly at the nylon plant of the Du Pont Co., has been named technical secretary of the Air-Conditioning and Refrigeration Institute. He succeeds John R. Schreiner, who recently joined the advanced engineering department of Carrier Corp. As technical secretary, Mr. Bergheim will serve as coordinator of the various engineering and standards committees of the institute and as technical adviser to the ARI staff.

FALLSINGTON TRENDMAKERS . . .

used in hundreds of shops throughout the nation



5' PIPE ROLLER . . . rolls pipe without damaging the locking device. This allows the lock to be formed on the sheets while it is flat. Capacity: 26 gage, 4" diameter (min.) in lengths up to 5'. All rollers are gear driven.

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FALLSINGTON

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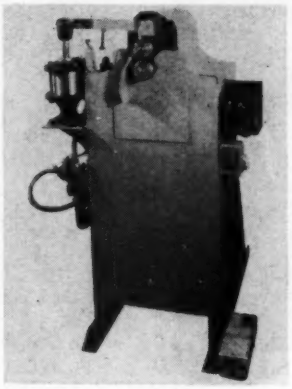
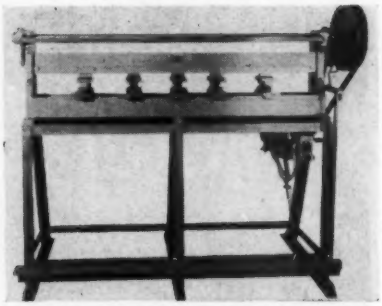


BEAD AND CRIMPER . . . recently developed by Fallsington engineers to eliminate waste of pipe during beading and crimping operation. Air actuated and equipped with electronic timer which can be set quickly for any diameter pipe. Easily operated and greatly reduces the fatigue factor. Companion machine for 5' Pipe Roller.



MULTI-NOTCHER . . . will make six notches at one time. Ideal for duct work. Dies are adjustable along the entire length of the machine. Power driven on hand operated models available in 36", 48", 60" sizes.

•

FALLSINGTON

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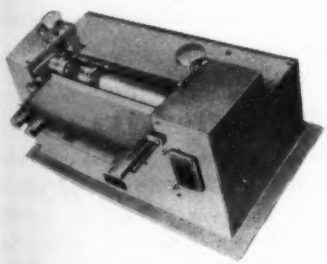
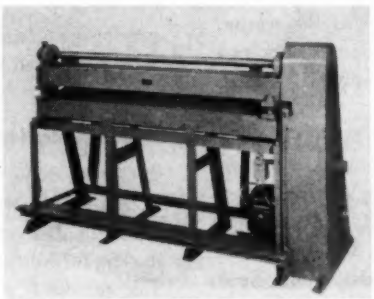
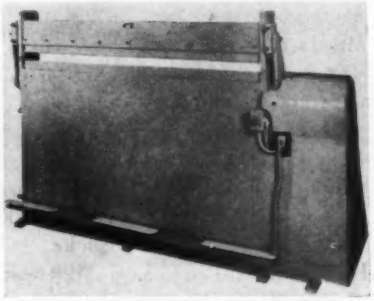


COLLAR ROLLER . . . this machine will make five different types of collars. Adjustable table gages permit rapid set ups for any of the following operations: bead; bead and slit; bead and crimp; bead, crimp and slit; slit in the flat.



HUSKY PRESS . . . gives you large press bed area in the low price field. Designed to handle large sheets for blanking, forming, notching and piercing various types of fittings and duct work. Available in 36", 48", 60" sizes. Model shown is back geared.



PROGRESSIVE BRAKE . . . compactly designed for use in metals up to 22 gage. Use it for making boxes and snap lock duct. By using sectional dies, bends can be made in various lengths up to the full length of the machine. Available in 36", 48", 60" sizes.

WRITE DIRECTLY TO US OR CONTACT YOUR NEAREST DEALER.

REPRESENTATIVES

Meyer Sheet Metal Machinery Company, Los Angeles, Calif.

Pittsburgh Metals Corporation, Pittsburgh, Penna.

S. J. Johnson Company, Detroit, Mich.

Ward Machinery Company, Chicago, Ill.

H. Weiss & Company, New York, New York

Noble & Company, Inc., Philadelphia, Penna.

Varys Bros., Inc., Columbus, Ohio.

E. D. Brooks Company, Ltd., Boston, Mass.

O'Neill Machinery Company, Seattle, Wash.

J. B. Wallis Company, Jacksonville, Fla.

Brown-Boggs Machinery & Foundry Company, Ltd., Hamilton, Canada

Alros Products, Ltd., Vancouver, British Columbia

Noble Supply Company, Birmingham, Ala.

sheet metal machinery

by

FALLSINGTON MFG. COMPANY

Fallsington, Penna.

(Delaware Valley, U. S. A.)

Invitation

You are invited to visit our plant whenever in the area. We are located off Route #1, between New York City and Philadelphia. (Near the new Fairless Steel Works.)

WITH THE ASSOCIATIONS

(Continued)

ANNUAL TROPHY is presented to Mel Jackson (center) by George Anderson. Dave Brown (right), association committeeman, beams his approval

RECEIVING congratulations for winning the daily trophy is C. A. Collins (center). Lars Schulein (left) presents the award as W. H. Klein awaits his chance to offer another prize

Golfers Meet for Third Tournament

THE THIRD and final tournament of the Chicago Warm Air Golf Association was held September 27 at Ruth Lake Country Club, Hinsdale, Illinois. The annual trophy, an 18 in. silver loving cup, was awarded to Mel Jackson for the two lowest net scores turned in during the season. Mr. Jackson played all three games, although only two scores are required to qualify for the trophy. His scores were 71, 71 and 68.

The lowest net score for the day (67) was turned in by C. A. Collins, who won the daily trophy, a bronze ashtray with the image of a golfer making a drive. Other prize winners were J. Nimeth, J. Anderson, C. M. Barnes, George Anderson, Art Schultz, J. A. Anderson, Joe Butler, C. E. Price, Lem Miller, E. Frick, Will Pennington, C. F. Marquis, A. Verbeek, Charley Bennett, Walt Aschliman, E. Campbell, O. Zeman and Harry Himelblau.

Due to inclement weather a number of the golfers were unable to complete the 18 hole tournament course; thus an award was made to those completing nine holes. Prizes awarded were to W. Klein and R. C. Wasson. Blind Bogey prize winners were G. R. Ludwig and O. Zeman.

New York Group Plans Convention

MEMBERS of the convention committees of the New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association met recently to discuss plans for the annual meeting scheduled to be held February 5 to 8. In attendance were president and Mrs. F. V. Pils, Secretary and Mrs. C. J. Meyer, Mr. and Mrs. William Steinhorst, Mr. and Mrs. Joseph Homka, Mr. and Mrs. Peter Sturr, Mr. and Mrs. Stanley Bates, and Mr. and Mrs. Frank Bockardt. Mr. and Mrs. George Ballard, Sr. represented the ladies' auxiliary, and the merchandisers were represented by C. E. Sperlik, president, and Robert Mackey.

Secretary Meyer urges all members to cooperate in the drive to secure advertisements for the annual convention program and reports that 14 manufacturers have already applied for space.

Illinois Bulletin Explains New Tax

A LETTER to W. R. Shaw, chairman of the tax committee of the Sheet Metal Contractors' Association of Illinois from the law offices of Thomson & Thomson explains the applicability of the Municipal Retailers' Occupation Tax to sheet metal contracting. The letter reports as follows on Retailers' Occupational Tax Rule 6, *Construction Contractors and Real Estate Developers*:

"*Definition*: A Construction Contractor. The word 'construction contractor' when used herein includes general contractor, subcontractor and specialized contractor. 'Contractor' means any person who is engaged in the occupation of entering into and performing construction contracts for owners.

"*Construction Contractors*—When Not Liable for Tax. A construction contractor does not incur retailers' occupation tax liability as to receipts from labor furnished and tangible personal property (materials and fixtures) incorporated into a structure as an integral part thereof for an owner when furnished and installed as an incident of a construction contract. For example, a construction contractor does not incur retailers' occupation tax liability on receipts from selling and installing screen doors and windows; weather stripping; insulation material; etc....plumbing systems or parts thereof, etc.; heating systems or parts thereof, such as furnaces, stokers, boilers,

EASIER *to Sell!*

EASIER *to Install!*

AMERICAN-STANDARD'S POPULAR GAS-FIRED BASEMENT LOW-BOY

NOW AVAILABLE *With Adjustable Legs* AS AN OPTIONAL EXTRA

Make your selling easier and save valuable working time on warm air installations. The new, adjustable leveling legs enable you to position the unit quickly. No needless extra work—no forms or base to build. In addition they permit easy cleaning of the basement floor—a feature that home owners recognize as a strong advantage.

Unit Factory Assembled and Completely Wired

Priced to sell fast in today's competitive market, Model GLA is factory assembled and wired and *Installation Tested* before shipment—just as if it were finally installed. Procedure includes actual gas firing and operation of the blower and controls. It's A.G.A. approved and burns all gases—natural, mixed, LP or LP-air.

Eight sizes to choose from! The five smaller sizes—75,000 through 175,000 Btu input—are shipped in a single carton. The three larger sizes—200,000, 250,000 and 300,000 Btu input—are factory assembled and wired but shipped with blower section in a second carton for more convenient handling on customer's premises.

For full details, contact your American-Standard warm air heating and air conditioning distributor.

EVERYTHING *for air conditioned comfort*

Warm Air Heating
Summer Cooling
Year 'round Units
Electrostatic Air Filters

American-Standard
AIR HEATING
AIR COOLING
AIR CONDITIONING DIVISION

AMERICAN-Standard

AIR CONDITIONING DIVISION

ELYRIA, OHIO

American Radiator & Standard Sanitary Corporation

heating pipes, etc.; ventilation systems or parts thereof; commercial refrigeration systems or parts thereof; electrical systems or parts thereof; brick; lumber; sheet metal; roofing materials, and other similar items.

"Specifically, the Retailers' Occupation Tax Act, under present rules and regulations, applies to over the counter sales of sheet metal products, ventilation and air conditioning systems, etc., but does not apply to same when the supplying of the materials is incidental to a contract for installation."

Indiana Appoints Convention Chairmen

THE CONVENTION COMMITTEE of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, under the chairmanship of Chris Sorensen, is actively at work on plans for the annual convention to be held February 2 and 3. Don McCloskey has been appointed chairman of the program committee and T. B. Speaker will head the short course committee. Other chairmen appointed include Harry Hurt, entertainment; Frank Anderson, publicity; Homer Selch, hotel; and Robert Shelley, banquet and luncheon. Heading the reception committee is Z. V. Hazelton, who will be assisted by Ben Flock, Howard Lewis, H. M. Daily, Maxwell Goff, H. W. Meggs, L. W. Widney, George Vyverberg, William Tudor, William Meador, E. N. Rhodes and Cornie Helwig.

LPGA Sponsors Heating Conference

A SERIES OF CONFERENCES, under the auspices of the LP Gas Association, dealing with the fundamentals of home heating, was conducted throughout the states of Illinois and Indiana during the late summer. Five representatives of manufacturers in the gas heating industry lectured and led discussions on individual aspects of gas heating in day-long sessions. In each area visited by the traveling conference group, local heating dealers were invited to attend and participate in the meetings.

Among the speakers was George B. McClellan, sales promotion manager of the Metalbestos division, William Wallace Company, who dealt with the problems of gas venting. Ralph Quade, factory representative for the Dearborn Stove Co., covered the subject of area heating. Bob Ireland, sales promotion manager of the Janitrol division, Surface Combustion Co. discussed heat loss calculation and Lew Sutherland, assistant sales manager of the division, talked on warm air equipment and its application. John Parks, a district manager for Minneapolis-Honeywell Regulator Co., discussed controls.

The series was sponsored by LPGA as an experimental method of instructing gas equipment dealers in the fundamentals of home heating. The material presented was condensed from standard heating engineering courses and concentrated into a one day session for the convenience of the dealers. LPGA initiated this method of instruction in an effort to stimulate dealer interest in better heating practices and thus to improve the general caliber of home heating practices.

NHAW Schedules Business Conference

THIS YEAR at the annual convention of the National Heating and Airconditioning Wholesalers, one day—Monday, November 28—is to be set aside for a business conference program. No other activity has been scheduled for this day, according to Harold W. Squire, chairman of the business conference program. There will be no business or committee meetings, and manufacturers will be requested to close all private rooms, hospitality rooms and parlors during the course of the business conference program.

Conference booths will be supplied with tables and chairs and an identifying name sign will be furnished. In order to be certain that the conference booths do not tend to become exibition booths NHAW requests that no equipment, models, demonstrators, literature or signs be displayed or exhibited. It is further requested that at least one representative of the manufacturer be in attendance at the conference booth during the entire business conference program and that he be a top level executive of the company.

Hold Evaporative Cooler Meeting

Representatives of 15 evaporative cooler manufacturers met recently in Los Angeles to discuss the advisability of forming a trade association. It was pointed out that a number of activities might be better handled by an association than by individual companies. These include newspaper and magazine publicity; public relations with government agencies such as FHA and the military services; educational helps for dealers, installers and users; new uses for evaporative coolers such as industrial and agricultural; uniform testing and rating code; appeal for more equitable transportation costs; exchange of labor information on regional basis; exchange of technology; industry statistics; and research.

A steering committee was formed to study the matter further and to obtain factual information on the method of establishing an association, annual expense involved, and amount of time and effort that would be required of the members. R. S. Ash was elected chairman with Donald W. Belknap representing Oklahoma, Missouri and Texas manufacturers; T. M. Northcote, California manufacturers; and R. E. Abbott, Arizona manufacturers.

A second general meeting is to be held at Western Hills Motel, Fort Worth, during the week of December 5 at which time the findings of the steering committee will be presented for discussion.

a new plant for PARKER-KALON

to keep P-K production and progress in pace with expanding needs for P-K Fasteners

In a few weeks, Parker-Kalon will move to its new plant in Clifton, New Jersey (about 10 miles from New York City). This modern building, containing 267,000 square feet on one floor, is one of the largest plants devoted exclusively to the manufacture of fasteners.

It is planned for the highest efficiency and economy in all operations,with production keyed to the steadily increasing demand for P-K Fasteners throughout industry. Advanced facilities for engineering and research will accelerate P-K progress in development of new and improved fasteners.

Now, more than ever, you can be sure . . . "If it's P-K . . . it's OK!"

PARKER-KALON DIVISION
General American Transportation Corporation
Clifton, New Jersey.

PARKER-KALON

SELF-TAPPING SCREWS — STAPS — SOCKET SCREWS — SCREWNAILS — MASONRY NAILS — WING NUTS — THUMB SCREWS

Sold through leading Industrial Distributors

WITH THE ASSOCIATIONS

(Continued)

Coming Events

Nov. 27-29—National Heating & Airconditioning Wholesalers, Inc., fall annual meeting and convention. Hotel Governor Clinton, New York. Wilbur R. Bull, Executive Director, 1200 W. Fifth Ave., Columbus, O.

Nov. 28-Dec. 1—Air-Conditioning and Refrigeration Institute, 9th Exposition of the Air-Conditioning and Refrigeration Industry. Atlantic City, N. J. George E. Mills, show director, 9th Exposition of the Air-Conditioning and Refrigeration Industry, 1346 Connecticut Ave., N. W., Washington, D. C.

Nov. 28-29—National Warm Air Heating and Air Conditioning Association, board and committee meetings. Hotel Statler, New York. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Nov. 30-Dec. 1—National Warm Air Heating and Air Conditioning Association, annual convention. Hotel Statler, New York. George Boeddener, Managing Director, 640 Engineers Bldg., Cleveland 14.

Dec. 1-3—American Society of Refrigerating Engineers, annual meeting. Traymore Hotel, Atlantic City, N. J. R. C. Cross, Executive Secretary, 234 Fifth Ave., New York 1.

Jan. 22-26—National Association of Home Builders, annual convention. Conrad Hilton Hotel, Chicago. John M. Dickerman, Executive Director, 1625 L St., N. W., Washington 6, D. C.

Jan. 23-25—American Society of Heating and Air-Conditioning Engineers, Inc., annual meeting. Sheraton-Gibson Hotel, Cincinnati. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.

Feb. 2-3—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, annual convention. Hotel Severin, Indianapolis. Frank E. Anderson, Executive Secretary, 439 S. 17th St., Terre Haute, Ind.

Feb. 5-8—New York Sheet Metal, Roofiing & Air Conditioning Contractors' Association, annual convention. Hotel Utica, Utica, N. Y. Clarence J. Meyer, Executive Secretary, 567 Genesee St., Buffalo.

Mar. 11-14—Sheet Metal Contractors Association of Wisconsin, annual convention. Hotel Schroeder, Milwaukee. R. S. Schmieder, Executive Secretary, 8320 W. Bluemound Road, Milwaukee.

Mar. 22-23—Michigan Heating and Sheet Metal Association, Inc., annual convention. Hotel Fort Shelby, Detroit. N. J. Biddle, Executive Secretary, 3035 E. Grand Ave., Detroit 2.

Apr. 16-17—Sheet Metal Contractors Association of Illinois, Inc., annual convention. Abraham Lincoln Hotel, Springfield, Ill. Jay E. Harms, Secretary, 1619 N. Sheridan Rd., Peoria, Ill.

Apr. 19-21—Gas Appliance Manufacturers' Association, annual meeting. The Greenbriar Hotel, White Sulphur Springs, W. Va. H. Leigh Whitelaw, Managing Director, 60 E. 42nd St., New York 17.

May 9-12—Sheet Metal Contractors' National Association, Inc., annual convention. Shoreham Hotel, Washington, D. C. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

June 3-6—American Society of Refrigerating Engineers, semi-annual meeting. Sheraton-Gibson Hotel, Cincinnati. R. C. Cross, Executive Secretary, 234 Fifth Ave., New York 1.

June 18-20—American Society of Heating and Air-Conditioning Engineers, semi-annual meeting. Shoreham Hotel, Washington, D. C. A. V. Hutchinson, Executive Secretary, 62 Worth St., New York 13.

June 21-24—Carolinas Roofing & Sheet Metal Contractors Association, annual convention. Ocean Forest Hotel, Myrtle Beach, S. C. Julian M. McKeithan, Secretary, 1219 Fairway Dr., Wilmington, N. C.

When you've got to figure tight

DURO-DYNE

—You can save money on round balancing dampers with the Sensational *New*

Jiffy Damper

JDS Series—With Spring-Loc

JD Series—No Spring-Loc

Complete, prefabricated, inexpensive dampers ready for immediate installation in ductwork. A comparable damper made in the shop costs considerably more. The Jiffy Damper consists of the famous **PARKER-KALON** Jiffy Regulator (now made by Duro-Dyne) preattached to a galvanized iron blade. Steel threaded bearing can't break. No loose parts to rattle.

Two styles are available: JDS Series has patented Spring-Loc for keeping damper in perfect position under high air velocities. JD Series—same as JDS but without Spring-Loc. For Six Duct Sizes: 4", 5", 6", 7", 8", 9"; Special sizes and shapes also available.

DURO-DYNE

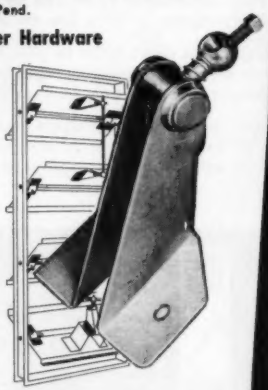
—You can use unskilled labor to make absolutely non-binding louver dampers with the

NEVA BIND T.M.

Duro-Blade Kit

Pat. Pend.

Precision-Engineered Damper Hardware



Permits smoothly operating, non-binding louver dampers to be assembled with little care and no alignment afterward. The Neva Bind Duro-Blade Kit's unique 4-way adjustability automatically compensates for inaccuracies in damper construction, thereby preventing undue stress or bending of the connecting rod, the main cause of damper binding. Neva Bind Duro-Blade Kits cost no more than old type kits.

Each Neva Bind Duro-Blade Kit contains: 1 Neva Bind Duro-Bracket, 1 pair self-oiling Duro-Bushings; 1 pair Duro-Bearings.

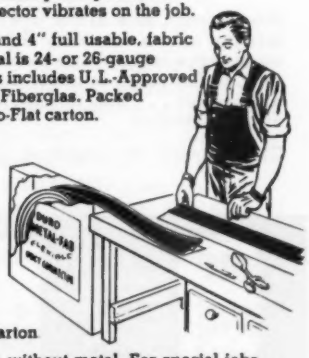
DURO-DYNE

—You can make flexible connectors up to 3 times faster with Duro-Dyne's

Complete line of flexible Connector Materials

Duro-Metal-Fab: Preassembled metal-to-fabric-to-metal. *Saves expense of attaching metal to fabric.* Exclusive Double-Loc Seam prevents fabric pulling out while braking, or being cut when connector vibrates on the job.

Generous metal dimensions 3" and 4" full usable, fabric dimension over 3" exposed. Metal is 24- or 26-gauge galvanized iron. Choice of fabrics includes U.L.-Approved Canvas, Asbestos or Neoprened Fiberglas. Packed 50 ft. or 100 ft. to handy Dispenso-Flat carton.



Econ-O-Fab: Considerably lower price, but same quality and construction as Duro-Metal-Fab. Lighter metal and fabric for residential work and lighter gauge ductwork. Same generous metal and fabric dimensions. Includes Double-Loc Seam. Same choice of fabrics. Packed 50 ft. or 100 ft. to handy Dispenso-Flat carton

Duct Fabric: Quality fabrics without metal. For special jobs where contractor must fabricate connectors from fabric and metal cut to size. Following fabrics are supplied in 100 ft. rolls packed in handy dispenser cartons: Canvas, U. L.-Approved—6" or 10" widths. Asbestos, Heavy Grade—6" width. Neoprened Fiberglas—6" width.

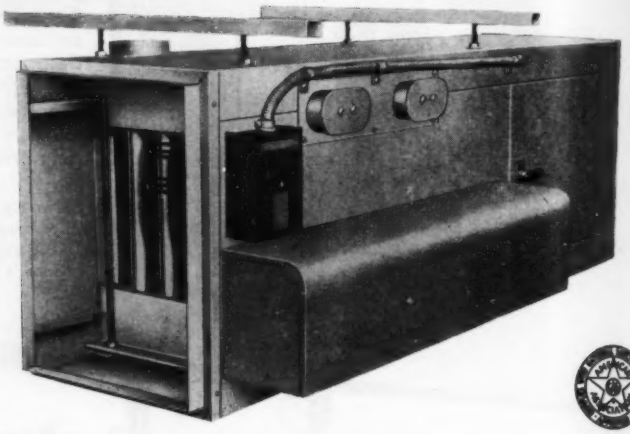
Write us for literature or see your distributor

Duro-Dyne Corporation

800-B THIRD AVENUE, NEW HYDE PARK, N. Y.

There's Nothing Like COZY for COLD-WEATHER COMFORT

And There's Nothing Like



COZY for GREATER FURNACE SALES

When you are selling the Cozy line of gas-fired furnaces, you know that you can take care of over 90% of your customer's heating problems. That's because there's a Cozy for practically any purpose or capacity—and that it has the quality features, backed by over 25 years of experience, that assure you of customer satisfaction.

For instance, look at the new Cozy Horizontal Furnace. It lets you offer a forced-air furnace that is not only a space saver, but a money saver as well. It can be installed in the attic, utility room, or under the floor, even when there's not a basement . . . and its distribution system lends itself to air conditioning.

Then there's the standard Cozy forced-air furnaces in 140,000, 105,000, or 75,000 BTU input capacities available in either counterflow or upflow models. These modern furnaces are equipped with the exclusive *Curvic Heat Wringer*, which is the most modern advancement in heat exchangers in recent years. The compact design of Cozy furnaces gives you zero clearance. They can be installed with either the four-inch piping or with conventional ductwork.

Of course you don't want to pass up the Cozy Wall Heaters for volume sales to motels, apartments, etc.—and the Cozy Challenger, the best buy in floor furnaces.

All Cozy products are shipped assembled for easy installation... *Why don't you write now for information on the Cozy line and ask about the high-profit, year-around sales plan.*

Cozy Models 200-140 Upflow and 201-140 Counterflow, 140,000 BTU Input Capacities.
Cozy Models 201-105 Counterflow and 200-105 Upflow, 105,000 BTU Input Capacities.
Cozy Models 200-75 Upflow and 201-75 Counterflow, 75,000 BTU Input Capacities.
Cozy Wall Heaters available in four capacities and for single or dual installations.
Cozy Challenger Floor Furnace with accessible controls the best buy in floor furnaces.

COZY

The ADVANCE FURNACE CO.
WICHITA, KANSAS

Grant Wilson Flexible Duct Connections

...the connectors that give you ALL the advantages:

1 ALL three types to choose from

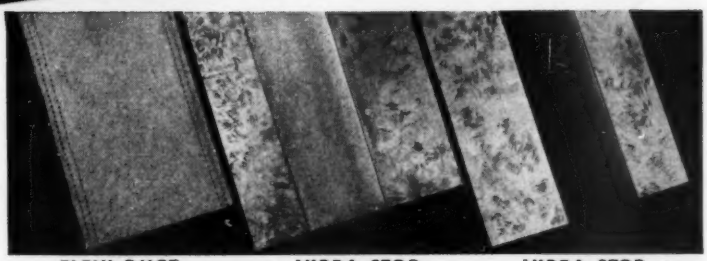
2 ALL three lengths—25, 50, 100 ft. rolls

3 Both 24 and 26 gauge metal

4 New "Punch-Lock" seam for permanent metal-to-fabric bond

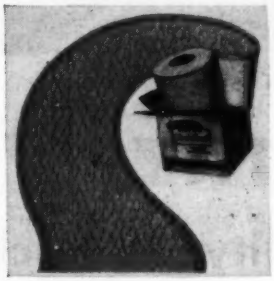
5 No. 1 Prime galvanized metal used exclusively

- the *RIGHT* size
- the *RIGHT* materials
- the *RIGHT* design
- the *RIGHT* principle!



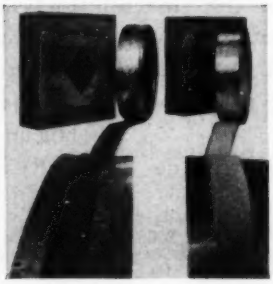
FLEXI-DUCT | VIBRA-STOP (Asbestos) | VIBRA-STOP (Canvas)

Check the *Quality Features* of these Grant Wilson Products



Flexi-Duct

...Woven Asbestos Flexible Tape. (Underwriters' Grade). Meets recommendations of National Board of Fire Underwriters. Comes in 6-inch, 50 foot rolls and 8-inch, 150 foot rolls, both with selvaged edges. Can be taped, bolted or otherwise easily and permanently secured to equipment or ductwork.



Vibra-Stop

...Asbestos or Canvas fabric, 4" wide, factory "Punch-Lock" sealed to 4-inch No. 1 Prime galvanized metal on one side, 3-inch on the other. Asbestos used is heavy Underwriters' Grade and meets Fed. Spec. MIL-C-4177. Canvas, also Underwriters' Grade, meets Fed. Spec. MIL-D-10860. 25 foot, 50 foot and 100 foot rolls in handy "roll out" cartons.

Composite photo shows typical installations of FLEXI-DUCT and both types of VIBRA-STOP.

SEE YOUR JOBBER... OR WRITE DIRECT FOR SAMPLES

Grant Wilson inc.
ASBESTOS and INSULATING MATERIALS

141 W. Jackson Blvd. Chicago 4, Ill.

GALVANIZED SHEETS

Top Quality... Quick Delivery

When sheet metal jobs call for galvanized, you want quick delivery. And you want a sheet that forms readily . . . gives long-lasting protection against corrosion.

That's what you get when you call Ryerson, dependable quality, fast service.

Our stocks of galvanized sheets are large; we can offer you many gauges in a wide range of pattern sizes, as well as in sizes cut to your order. These sheets have a uniform coating, clean and bright, which will give your jobs permanence plus a pleasing appearance that your customers will appreciate. And one good job always leads to another.

There's convenience in calling Ryerson, too. In addition to galvanized, you can get quick shipment of most every other steel requirement —hot and cold rolled carbon steel sheets, stainless, Ry-ex expanded metal, bar size angles, etc. Just call your nearest Ryerson plant for fast action.

• • •

Need metal-working machinery or tools? Again you can deal with the same convenient source. Your nearby Ryerson plant supplies every type used by sheet metal shops.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N.C. • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

How To Stop Bid Shopping

ONE JEOPARDY that forever hangs over many small businessmen — especially the sub-contractors — is the pressure exerted by some general contractors to beat the price down. To overcome this situation repeated efforts have been made to get Congress to pass an anti-bid shopping bill. In past sessions the bill has often died in conference but during the 84th session, the Senate passed such a bill (known as S.1644) by a voice vote. It is now in the House of Representatives where action is expected when Congress convenes in January 1956.

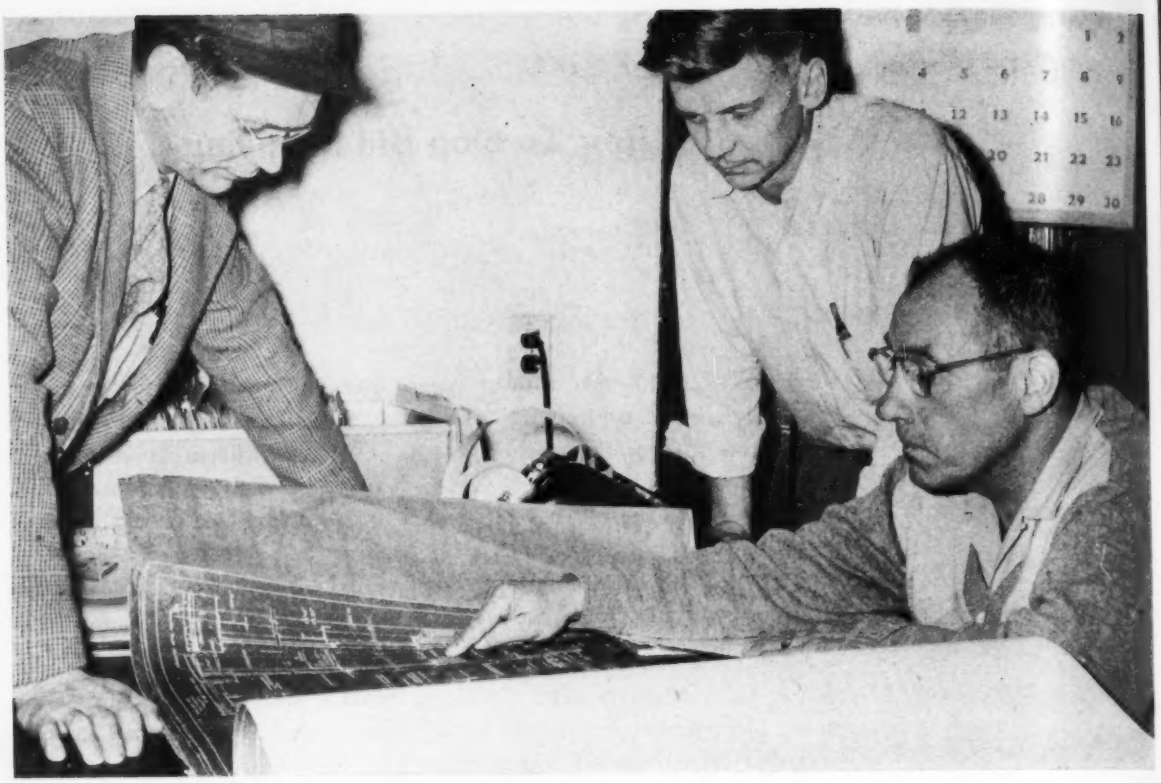
Congress' interest in this bill is shown by the Senate's two hour debate prior to its passing. Only one Senator spoke against the passing of the bill while eight Senators spoke in favor of the legislation. The voice vote that carried the bill indicated the favor in which the bill now stands. It's up to dealers and contractors to see that Congress doesn't let the importance of this bill fade into the background when other national problems are debated in the next session. The House bill that was introduced during the closing days of the 84th Congress was known as HR7676 and has been assigned to the House Judiciary Committee. Hearings on the bill are scheduled for January, 1956.

Small dealer-contractors will find that the passing of an anti-bid shopping bill will be of considerable value to them as it will prevent prime contractors from favoring certain sub-contractors by revealing the price they will set to award the contract.

Inasmuch as the bill actually applies to construction for the executive department of the federal government, industry authorities feel its main importance lies in the pattern it is likely to establish for similar legislations by state and local governments and associations.

It is also expected that such a bill will result in more small contractors becoming interested in sub-contracts with the result that the amount of work being done will be spread over larger business areas than has been possible under the present method of letting the bids.

Industry leaders believe local interest in the bill will result in its getting the necessary attention. They suggest that each dealer-contractor in the warm air heating, air conditioning and sheet metal contracting field write his representative. A sample message might read similar to the following: "As my representative in the nation's capitol, I implore you to do all you can to see that the anti-bid shopping bill is passed in the next session of Congress."



They Tore Up the Plans

when they found they could save the customer $7000 on a sheet metal job

...and Won the Contract

when they produced new specifications which actually improved on the original plans at this lower figure

BRIGHT, easily cleaned 4B finish stainless steel combines attractiveness with utility

IT'S A PRETTY GOOD BET that a sheet metal contractor who has the confidence and the know-how to tear up a set of specifications and redesign a job to cut the customer's cost by a third will prove to be a leader in his field.

Certainly it's true of Perkins Sheet Metal, Inc., Madison, Wis., which is successfully following the path marked by its late founder, Cy Perkins, who opened the small shop ten years ago after 32 years in the field and developed it to one of the largest in the area, now employing 31 people under the leadership of President Arno C. Handel.

Improvements Cut Costs

The case in point began with a call by a large hospital in Madison for bids on installation of seven sheet metal hoods in auxiliary kitchens. The sheet metal firm estimated the job at $22,000 as it was laid out. But they weren't satisfied with the plans — they objected to the ventilating fans suspended from the ceilings, feeling they not only would be too expensive, but also would detract from the appearance of the stainless steel hoods and ductwork they planned to install.

So they redesigned the job to replace the suspended fans with nine power wall exhausters, and came up with a new figure of $15,000 — a saving to the hospital of $7000. The delighted prospect threw out the original specifications and awarded the contract to Perkins Sheet Metal. The job was completed 20 days ahead of the 60 day time limit.

Sanitation Calls for Stainless Steel

"Because of the sanitation aspect of kitchen work we wouldn't specify anything but stainless steel," says Mr. Handel. "In addition, stainless steel maintains a clean appearance, never rusts out and is always easy to clean."

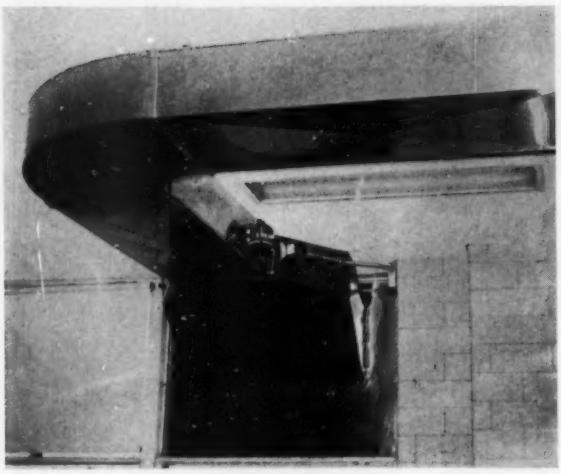
For the job, the company fabricated the seven kitchen hoods and installed the nine power exhausters which included two dual installations. They used 1/6 hp motors on most of the exhausters, 1/3 hp on a couple which had bigger loads.

For the hoods they used 16 gage type 302 stainless steel with a 4B finish; all the ductwork, approximately 100 lineal ft in various sizes, was in 22 gage stainless steel with 4B finish.

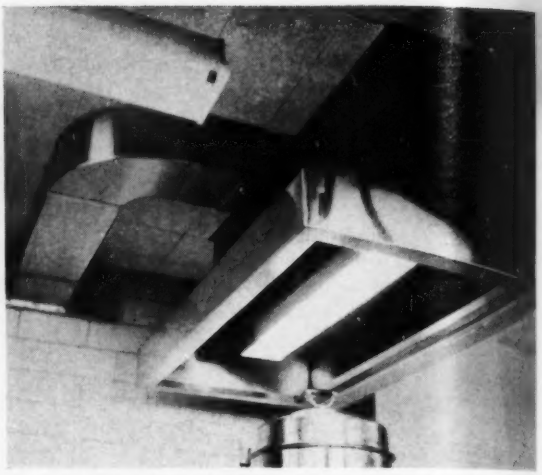
"We felt we should use this finish in kitchen work because it had to be sanitary," Mr. Handel said. "Not only that, it has to look sanitary, too. If we had used 2B finish we'd have had a dull satin that would have picked up dust easier and wouldn't have been as bright and shining. Bright appearance is a major factor — a dull finish doesn't show the dust so readily and might be overlooked in cleaning."

Minor Variations Called For

All hoods were on interior walls; most of them had ducts running to the windows. Two were in main dining rooms, one for employees and one for ambulant patients; the others were for serving kitchens in which food was prepared for the wards on five floors. So there was a considerable amount of uniformity, but since the wards differed in function and size, there were minor variations. On the third floor, for example, the hood was placed against a wall through which passed the ventilating system of the main kitchen downstairs (done on separate contract) from which the other seven kitchens were served. Rather than run a duct from this installation to a window, they ran it directly into the wall behind, and



LOW VOLTAGE damper motor was installed on all ducts to prevent back drafts when the exhaust fan is not in operation



FLUORESCENT LIGHTING fixtures were attached to some of the stainless steel hoods

"A contractor can make just as much money out of a number of small jobs as he can a few big ones and often they are easier to handle."

into the main kitchen ventilating system. But an auxiliary hood in this room required a wall exhauster.

Know-How Solves Problems

Except for this one case, ductwork from all the hoods ran under the ceiling to window outlets. Here they used sheets of ½ in. plywood, covering both sides and all edges with 24 gage stainless steel. This unit replaced the window sash, and in it was mounted the power wall exhauster. The exhausters operate at 1500 fpm velocity. Low voltage motors were installed in each duct to prevent any possibility of cold air entering the building when the exhaust systems were off.

All but one hood were fabricated completely in the shop and taken to the job for installation. They were heli-arc welded using argon gas; all joints were ground and polished in the shop. One hood was assembled on the job because its 14 ft length made it too long to handle in the building. Each hood contains aluminum grease filters and mountings were attached on some of them for fluorescent lighting fixtures.

Building Engineer, Walter Schubert, to say the least, was delighted. "All in all, it's one of the finest jobs in stainless steel I've seen," he said. We're so proud of the results we make it a point to show the work to visitors.

"Even from the outside, it's a beautiful job. Perkins Sheet Metal mounted the exhausts for the upper floors in a series of windows up one side of the building, and that's one shot that all of the newspaper photographers made a special point to get."

Smaller Jobs Aren't Overlooked

While the firm is justifiably proud of this job, as contracts go it was a small one. The bulk of its work is in sheet metal construction, largely in church steeple and ornamental sheet metal work. The company ordinarily uses more than 30 tons of copper a year, and the bigger contracts range to over $70,000. It does a lot of work at military installations in the area, such as Truax field, the Badger Ordnance plant and Camp McCoy, and has done the sheet metal work in various multi-million dollar high schools and colleges in the area.

"But we like these smaller jobs, too," says Mr. Handel. "A contractor can make just as much money out of a number of smaller jobs as he can out of a few big ones, and often they are easier to handle.

"And there's nothing like a well done stainless steel kitchen job to build up a man's ego, especially when the estimating-design team comes through with really effective cost cutting ideas."

Engineering

Installing

Servicing

Use Fan Laws to Rate Blowers for Cooling

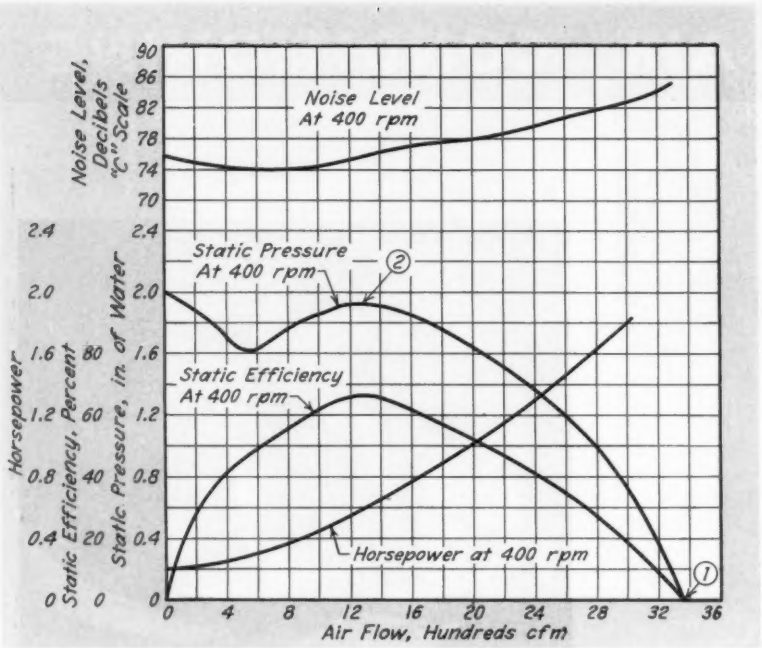
A review of blower and duct system characteristics and reference to resistance, horsepower, pressure and noise curves will determine adequacy of the blower when cooling is added to the existing heating system

By S. W. Reid

Air Conditioning Engineer
Gilbert Associates, Inc.

THE INSTALLATION of add-on cooling units for central residential air conditioning systems often brings up the subject of whether the furnace blower is large enough to handle the additional air volume usually required for summer cooling systems. The subjects of blower capacity, static pressure and horsepower requirements all enter into the engineer's decision when he specifies the equipment to use and estimates the costs involved. The figures used in the accompanying examples are from an actual residential system (larger than most) and were selected because they bring out very effectively what can take place when a change is made in the characteristics of the air distribution system by delivering larger quantities of air.

The blower does not usually command attention commensurate with the part it plays in the overall functioning of a system, perhaps because of its relative mechanical simplicity. Nevertheless, the blower is a precisely engineered component which must be applied in accordance with certain



1 FAN CHARACTERISTIC curves for blowers with forward curved blades provide basis for blower application. Point 1 shows maximum air delivery at given speed; point 2 is maximum static pressure at blower

well defined principles if it is to perform satisfactorily.

Two Basic Types

There are two fundamental blower classifications: centrifugal and axial. Included in the former are three principal types as defined by the blade characteristic, which may be forward curved, radial or backwardly inclined. In the latter classification are the propeller fans, the tubeaxial fans and the vaneaxial fans. Air flows substantially in a radial direction through the blades of a centrifugal fan and in an axial direction through the blades of an axial fan.

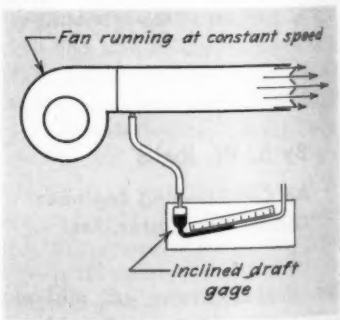
When we use the word residential in a discussion of air conditioning blowers, we have, for the most part, limited ourselves to the centrifugal blower with forward curved blades, since this is the type most often used in smaller air conditioning systems. It is well adapted to this particular service for several reasons. One is that, being a centrifugal type, it has a characteristic horsepower requirement which at constant speed decreases with a decrease in air volume. This is desirable, for if, in an air conditioning system, a damper is closed or a filter becomes clogged, horsepower will drop as the air volume is reduced. The behavior of the propeller fan with respect to horsepower is just the opposite. This makes it generally unsuitable for application to a duct system of variable resistance. Propeller fans are seldom applied for more than ½ in. static pressure which is not sufficient for large air conditioning systems.

Another reason for the choice of the forward curved blade centrifugal blower for moving relatively small air volumes has to do with speed. This type of blower will operate at a lower speed for a given duty than will the backwardly inclined blade fan. The latter has certain characteristics which make it desirable in the larger sizes in spite of its higher speed. For sizes less than about 2 ft wheel diameter, however, the high speed of the backwardly inclined blade blower may result in excessive belt speeds. To avoid these, therefore, the forward curved blade blower with its lower rotative speed requirement is chosen. This type blower is also more adaptable than one requiring a high rotative speed to applications where several wheels are mounted on a common shaft, since shaft diameter is in part a function of its speed.

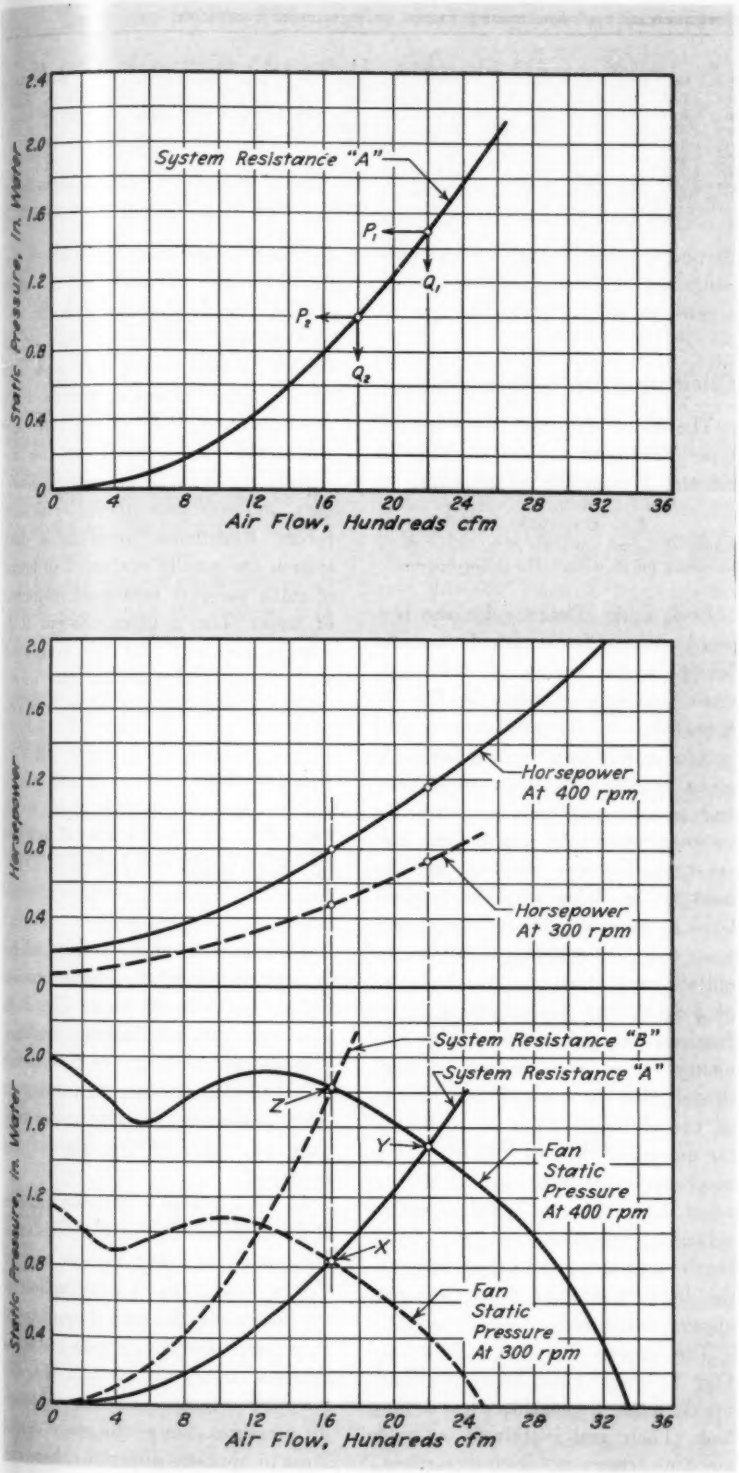
Blower application requires knowledge of the relationship of the various fan characteristics as shown in Fig. 1. These are 1) speed, 2) air volume, 3) pressure, 4) horsepower, 5) efficiency and 6) noise. Fan performance curves are established by laboratory test in accordance with a test code sponsored by the National Association of Fan Manufacturers and the American Society of Heating and Air-Conditioning Engineers. The curves in Fig. 1 are typical for a forward curved blade blower.

Know Fan Characteristics

The maximum amount of air a blower can deliver when operating



2 TEST SETUP utilizes inclined draft gage with fan running at constant speed. As damper is closed pressure at fan outlet rises as shown by static pressure curve (Fig. 1)



3 DUCT SYSTEM CHARACTERISTIC curve (top) establishes system resistance for various static pressures and air volumes

4 FAN-DUCT SYSTEM balance (below) is determined by superimposing pressure and air flow curves

at a given speed is represented by point 1 on Fig. 1. This point is actually the intersection of the static pressure curve and the zero pressure line. The cfm at this point is known as the volume of free delivery. If the flow of air is restricted such as by adding duct work, pressure will build up at the blower outlet in accordance with the relationship represented by the static pressure curve. Fig. 2 shows a simplified test setup. The pressure at the blower can be built up to a maximum as represented by point 2 in Fig. 1. Further restriction will cause a fall-off and then a re-establishment of pressure as shown by the curve. Blowers are normally applied to deliver air volumes to the right of the peak point 2 and, therefore, we shall not concern ourselves with the rather peculiar shape of the curve to the left of this point in this article.

Plot Curves on Fixed Speeds

The static pressure curve shown in Fig. 1 applies only for one particular speed (rpm) of the fan. Curves for other speeds have the same characteristic shape as the one shown. For any given point on the curve shown, the corresponding point at any other speed may be calculated. Thus:

$$Q_2 = (N_2/N_1) \times Q_1$$
$$P_2 = (N_2/N_1)^2 \times P_1$$

where Q_1 and Q_2 are given and desired air volumes, cfm; P_1 and P_2 are given and desired pressures, in. of water; N_1 and N_2 are original and new speeds, rpm.

Like the static pressure curve, the horsepower curve shown in Fig. 1 applies to only one particular fan speed. Curves for other speeds may be found by the relationship:

$$Hp_2 = (N_2/N_1)^3 \times Hp_1$$

For the forward curved blade fan, there is a constant increase in the power requirement with an increase in cfm as shown. This is in contrast to the horsepower curve for the backwardly inclined blade fan which, for any given speed, reaches a peak and then decreases as the cfm increases. It also makes an interesting comparison, as previously mentioned, with

TABLE 1 — FAN PERFORMANCE data is representative of fan manufacturers' ratings under acceptable conditions

Fan Size	Volume (cfm)	Outlet Velocity (fpm)	⅛ in. SP Rpm	⅛ in. SP Hp	¼ in. SP Rpm	¼ in. SP Hp	⅜ in. SP Rpm	⅜ in. SP Hp	½ in. SP Rpm	½ in. SP Hp	⅝ in. SP Rpm	⅝ in. SP Hp	¾ in. SP Rpm	¾ in. SP Hp	1 in. SP Rpm	1 in. SP Hp	1¼ in. SP Rpm	1¼ in. SP Hp	1½ in. SP Rpm	1½ in. SP Hp
10⅝ in. dia. Wheel 1.015 sq ft Outlet Area	800	788	375	0.035	495	0.060	600	0.100	690	0.125	775	0.159	853	0.180	984	0.260	1102	0.360	1205	0.425
	900	888	390	0.047	505	0.075	605	0.110	690	0.145	773	0.175	853	0.195	982	0.310	1104	0.385	1208	0.490
	1000	988	405	0.060	515	0.085	610	0.125	693	0.165	773	0.185	848	0.280	980	0.330	1102	0.409	1207	0.505
	1200	1184	437	0.085	540	0.110	625	0.150	705	0.200	780	0.230	850	0.300	975	0.370	1096	0.450	1205	0.580
	1400	1380	472	0.115	570	0.168	652	0.200	727	0.250	795	0.285	860	0.340	980	0.450	1090	0.580	1199	0.650
	1600	1576	512	0.160	605	0.222	679	0.260	752	0.312	820	0.370	880	0.410	993	0.530	1098	0.660	1200	0.850
	1800	1774	548	0.220	637	0.280	710	0.330	780	0.390	842	0.445	900	0.490	1010	0.605	1108	0.730	1205	0.910

A SPECIAL SERIES

. . . of articles of interest to the residential air conditioning dealer is based on the author's wide experience in the field. The discussions began with consideration of the fundamentals and operating characteristics of residential cooling units, then turned to specific problems, service and installation techniques. Earlier articles have treated such contemporary subjects as types and characteristics of refrigerants, lubrication, charging and trouble shooting procedures, managerial problems, installation techniques, modernization and zoning.

CONTINUING THE APPROACH

. . . we will investigate more of the cooling dealer's problems, analyzing subjects such as liquid and suction line sizing, cooling problems in an old two story house, installation problems in remote air conditioning systems, methods of reducing heat gain into buildings, converting water cooled condensing systems to air cooled systems, and the pros and cons of the various cooling coil positions.

the horsepower curve for the propeller fan which characteristically decreases as volume increases.

Calculating Static Efficiency

The static efficiency curve for the type of blower we are studying is calculated from the relationship:

$$E = Q\,P/(6356 \times Hp)$$

where Q is air volume, cfm; P is static pressure, in. of water; Hp is horsepower.

Peak static efficiency for the forward curved blade fan is usually found in the region of maximum static pressure as shown in Fig. 1. Knowledge of fan efficiency is important in selecting the best fan for a given application where initial cost and space requirements must be weighed against operating costs. Beyond this, however, efficiency may be used as an index of relative noise level as may be seen by comparing these two curves in Fig. 1. Minimum noise for any given centrifugal blower of a particular design generally occurs near the point of maximum efficiency. It is not necessarily true, though, that the most efficient blower of two different types or makes is the quieter of the two. Efficiency is a much preferred indication of blower noise than either tip speed or outlet velocity. Sound meter tests have shown that the relationship between the latter and noise levels are not always consistent.

The various fan curves shown in Fig. 1 which have been described briefly might be considered as design tools. Their real usefulness, as with any tools, comes not from themselves, but from the way in which they can be applied to a job to solve a problem.

Consider Duct Resistance

Fan application involves consideration not only of the characteristic behavior of the fan, but also of the characteristic resistance of the duct system. Air flowing through the system is constantly losing some of its energy in overcoming frictional and various other retarding forces. Flow is maintained at a desired rate only when the fan imparts to the air exactly the amount of energy necessary to overcome these resistance forces. Resistance forces in a duct system are usually evaluated in terms of static pressure measured in inches of water. For a given system it is usually assumed that the resistance will change with the flow rate in accordance with the following relationship:

$$P_2 = (Q_2/Q_1)^2 \times P_1$$

where P_1 and P_2 are the original and new pressures; Q_1 and Q_2 are the original and new air quantities.

The equation above is very useful in construction of the system characteristic curve as shown in Fig. 3. It is necessary only to find the resistance pressure for one rate of flow either by calculation or direct measurement; other points on the same curve may then be obtained by use of the equation.

In Figs. 1 and 3 we have pictures of fan behavior and system resistance. It should be noted in the case of the fan (Fig. 1) that reduction in air flow when the rpm is unchanged is accompanied by a rise in static pressure; in the duct system (Fig. 3) a reduction in flow means a reduction in pressure. Since the two curves slope in opposite directions there can be only one common point on each and that is the point where they intersect when one curve is superimposed on the other as shown in Fig. 4. This common point is known as the balance point for a fan-system combination.

Complete fan curves such as presented here give the clearest picture of what actually happens when a fan is applied to a duct system

The independent nature of the fan and the duct system might be more easily remembered if we compare them to something similar with which we may have had more experience. Consider, for instance, a garden hose and a sprinkler. Operation of the hose without the sprinkler could be likened to the operation of the fan without a duct system. Flow in either case would be maximum, and pressure at the outlet of the hose or the fan would be minimum (see point 1 in Fig. 1).

We discussed previously with reference to Fig. 1 how the pressure at a fan outlet will build up when the flow is restricted. This same phenomenon can be demonstrated with the hose by restricting the free flow with the thumb. Maximum pressure in the hose as well as in the fan will be reached when the flow is entirely stopped.

The sprinkler by itself may be likened to a duct system. It would have a pressure-flow characteristic similar to Fig. 3, that is, a change in flow would be possible only with a change in pressure.

When the sprinkler and the hose are used in combination, the amount of water that flows depends upon just such a balance as shown in Fig. 4 for the fan and duct combination.

Speed, Resistance Can Be Altered

Let us now examine Fig. 4 more closely. It will be noticed that horsepower and static pressure curves for the fan are shown at both 300 and 400 rpm. In addition, two system resistance curves are shown. The system represented by curve *A* has a lower resistance than the one represented by *B*. The two sets of curves are necessary to show what happens when either the fan speed is changed or the system resistance at a given cfm is changed. These are the only two changes that can be made to a given circulating system.

Assume the fan is running at 300 rpm and the system has resistance characteristic *A*. The balance point is *X* which shows a delivery of 1650 cfm against a static pressure of 0.85 in. of water and requiring 0.48 hp. Now suppose we do not change the system in any way except that we speed up the fan to 400 rpm. The new balance point is *Y*. In accordance with the equations given earlier we can calculate the cfm, pressure and horsepower at point *Y* since it is at the same relative position on the 400 rpm line that point *X* holds on the 300 rpm line. (This is true because we have assumed that the resistance pressure of a duct system varies as the square of the air quantity — see Fig. 3. This assumption is close enough for most practical purposes. The actual relationship is slightly less than the square.) Thus, we should expect to find that the cfm at *Y* is $400/300 \times 1650 = 2200$, that the pressure is $(400/300)^2 \times 0.85 = 1.51$ and that the horsepower is $(400/300)^3 \times 0.48 = 1.14$. Note particularly how much a fan motor might be overloaded by the 33 percent speed increase that was assumed here.

Two Methods Possible

Assume for another example that we have a system operating at point *Y*. The amount of air being delivered is to be reduced from 2200 to 1650 cfm. Two methods are possible as mentioned. One would alter the system characteristic from *A* to *B* by use of a volume damper in the duct. The second method would leave the system the same as shown by *A* but would reduce fan speed to 300 rpm. The first method would result in balance point *Z*, whereas the second method would result in balance point *X*. The advantage of *X* over *Z* is that *X* requires only 60 percent of the horsepower required by *Z*.

Fig. 4 can be used to show the system rebalance necessary when a cooling coil is introduced into the ductwork of a forced warm air system. Before cooling is added, the system might be balanced at point *X*, the system having resistance characteristic *A* and the fan running at 300 rpm. The volume of air (1650 cfm) used for heating is assumed to be satisfactory for the new year 'round system. It is also assumed that a draft gage measurement (Fig. 2) showed the fan is presently operating against 0.81 in. water static pressure. It is further assumed that the dealer has determined from manufacturer's data that the cooling coil, filter, dampers, etc. will add a combined resistance to the system at 1650 cfm of 1.0 in. water. The new system, therefore, will have a total resistance at the desired cfm, which is 1.81 in. of water.

Larger Motor Needed

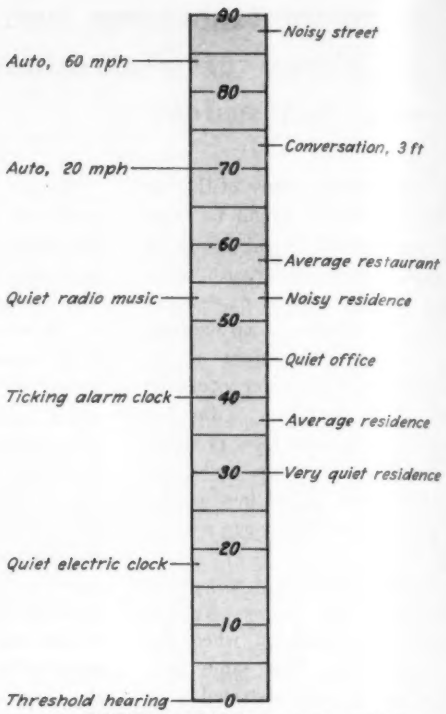
The above information gives us enough to establish system curve *B* (Fig. 3). Balance point *Z* tells us the fan must operate at 400 rpm to satisfy the air requirements. The horsepower curve tells us that whereas we did need only 0.48 hp, we shall need 0.8 hp for the new arrangement. We must replace a ½ hp motor with a 1 hp motor.

Although complete fan curves such as represented by Fig. 4 give one the clearest picture of what actually happens when a fan is applied to a duct system, they are not generally available from fan manufacturers. Most fan ratings are published in tabular form as represented in Table 1. The figures included in such tabulations are usually limited to what the manufacturer considers the most acceptable operating conditions for the particular fan. The dealer or contractor who keeps in mind the pattern which the tabulations represent will have no difficulty in using them without the actual picture.

A set of standards for heating equipment noise are proposed, based on fundamentals presented here and employing the dealer's ear as the best available detection instrument

Ear for Noise Starts Sound Control in Heating System

By S. Konzo and H. D. Bareither
University of Illinois



1 DECIBEL SCALE compares various sound levels

THE SUBJECT OF NOISE reduction is becoming more and more important in this mechanical age. Every commercial structure, and even the home, is filled with whirring machinery which is the source of sound, some of it unwanted. In the summer and fall when windows are opened the sound of traffic noise is most intense. With the increasing use of summer cooling, the windows can be closed and the outside noise can be shut out. The attention of the occupants is then directed to the noise of the internal equipment. Hence, both summer and winter, the problems of sound reduction face the installer.

Noise is Undesirable Sound

Noise can be defined loosely as undesirable sound. In the case of heating and cooling systems noise can arise at the burner or refrigeration machinery; at the blower or circulating pump; in the casing; in the ducts and stacks; at the registers or diffusers; or at the return intakes.

With the exception of specifications of the National Association of Fan Manufacturers, little information is available that relates to methods of measuring the noise of equipment. The reason for this lack of information becomes apparent when the difficulties of measurement are understood.

Sound Measurement Is Complicated Procedure

In the first place, sound measurements involve:

a) the sound pressure level, expressed in units of decibel (see Fig. 1). An average room in a home is considered to have a sound level of about 35 to 40 decibels, whereas a general office would average about 50 to 60 decibels and a railroad coach as much as 70 decibels. Although a wide variation exists between the noise of a home and that in a railroad coach, the difference in decibels is not as great as one might anticipate. A decibel level of 70 does not imply that the sound level is twice as great as that at 35, but a great many times more. In other words, the decibel scale is not a linear scale. The loudest noise encountered in normal living might be that of a low flying jet engine aircraft. Even this loud noise will register only about 120 on the decibel scale. Actually, a noise level of about 120 to 140 decibels is about the maximum that can be withstood without damaging the hearing mechanism. Our total range of noise then lies between a decibel of 1, at which we can barely distinguish a sound, and 120, which is about as much as we can stand. The noise level we are interested in, however, is at neither extreme. The level of intensity we encounter in a normal home is about 35 to 40 decibels, and our interest is in trying to keep the equipment noise level below 30 decibels.

Normally, when an equipment gives off a 30 decibel noise in a room that has a background level of 35 to 40 decibels, the noise of the equipment will not prove disturbing. In other words, decibels are not additive.

b) In the second place, sound measurements involve the frequency of the sound, or the tone. Usually, the sounds we are confronted with are not single frequencies, but combinations of a large number of frequencies. The problem of noise and sound measurements is complicated by the fact that decibels alone do not tell the whole story; our ears are differently sensitive to different frequencies.

New Sounds Most Noticeable

E. J. Abbott states, "If the loudness of a sound is varied without changing its quality, as for example, by changing the volume control on a radio or phonograph, ordinarily the energy must be changed by about 25 percent or 1 decibel before the change can be detected. On the other hand, if a new sound is introduced, its presence will ordinarily be noted when its energy is about 1 percent of the total, and it will be very noticeable when its energy is only 10 percent of the total."

In terms of the heating dealer this statement means that against a background noise of a constantly running fan, even the slight sound of a clicking relay can be easily noticed.

The human ear has some peculiar characteristics. J. S. Parkinson, for example, states that different frequencies have different annoyance levels. That is, that high pitched sounds are more annoying than low pitched sounds, even when each have the same loudness level.

Parkinson estimates that "a loudness level of 40 decibels at 5000 cycles is just as annoying as one of 55 decibels at 1000 cycles, and 68 decibels at 100 cycles."

This theory would seem to bear out a controversial theory held by some that the noise created by a room full of chattering women will prove more annoying than the same room full of talkative men, even if the sound level is the same. Or in terms of heating equipment, the whistle of air at a register may prove more annoying than the deeper noise of a blower motor.

From this brief introduction it becomes apparent that any equipment for measuring sound will involve devices for measuring not only sound level, but also frequency. The instrument will be an electronic device consisting of microphones, amplifiers, etc. The cost will run into hundreds and even thousands of dollars. The American Standards Association specifies a Sound Level Meter in their publication Z 24.3-1944. This instrument is a laboratory instrument and requires a competent technician to operate it. Such a device generally is not suitable for use by a heating dealer.

Ear Is Best Instrument Available

No more accurate instrument is available for field surveys than the human ear, which although sensitive is not altogether reliable since the hearing function varies widely among individuals. In spite of its limitations, the use of the ear as an analyzing instrument is recommended.

E. J. Abbott states, for example, "the human ear is a very remarkable instrument. Among its many peculiar characteristics we are particularly concerned with its marvelous ability to distinguish certain sounds in the presence of other and much louder sounds. In a surprising number of cases it is found on measurement that we are concerned chiefly with sounds which may contribute but slightly to the total noise. If favorable conditions for listening are available, and if the changes can be made quickly, there is little doubt that a good ear is of much more value than a poor sound meter."

Standards for Equipment Noise

On the assumption that the heating dealer must rely on his ears to locate the origin of sounds and to establish their intensity, the following set of standards is proposed:

CLASS A: Equipment is quiet and sound is not noticeable

CLASS B: Equipment is quiet but sound is noticeable

CLASS C: Equipment noise is loud but not objectionable

CLASS D: Equipment noise is loud and objectionable

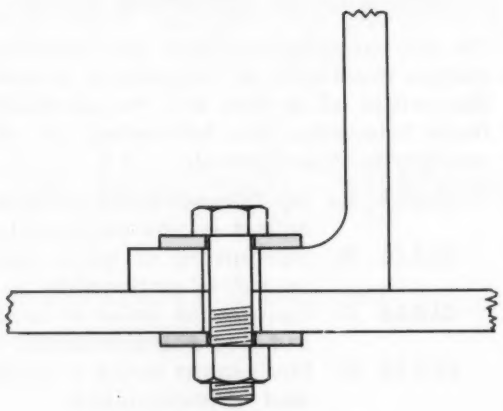
Obviously, however, the listener is confronted with many problems that are characteristic of the complexity of sound measurements. For example, an occasional creaking of a duct or the hissing of a steam radiator airvent may prove most annoying even though the intensity of the sound is low and the noise occurs only infrequently. Also a noise may be heard in front of a register but not to the side. Or a sound may be noticed in the corner of a room but not in the middle of the room even though the corner is at a greater distance from the source of the noise.

Two hearing aids have been proposed for use in the field. A wooden yardstick is placed on the suspected source of vibration, such as a blower housing or furnace casing, and the ear is pressed against the other end of the yardstick. Or a megaphone arrangement can be set up to intensify the sounds. Some listeners claim the ability to distinguish the nature and source of sounds, just as a mechanic claims the ability to distinguish sounds in a car engine.

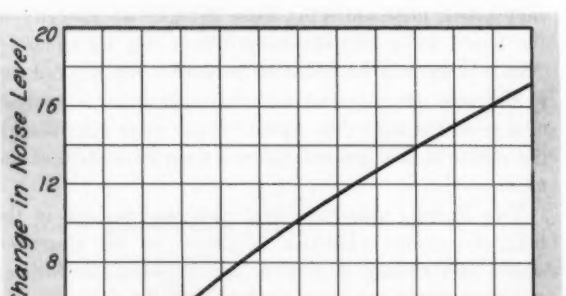
A few notes and hints relating specifically to the blower and the blower motor seem to be called for at this point:

Once the noise is spotted . . .

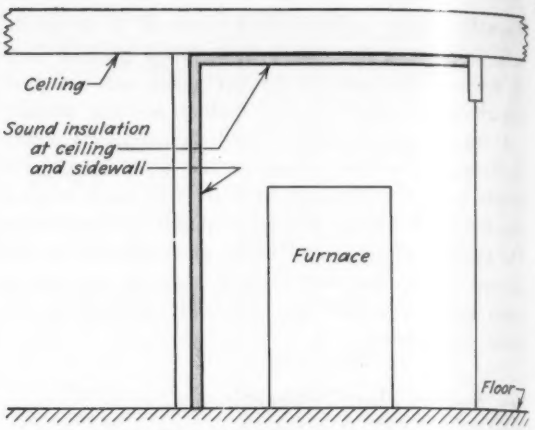
. . . here are a few of the solutions



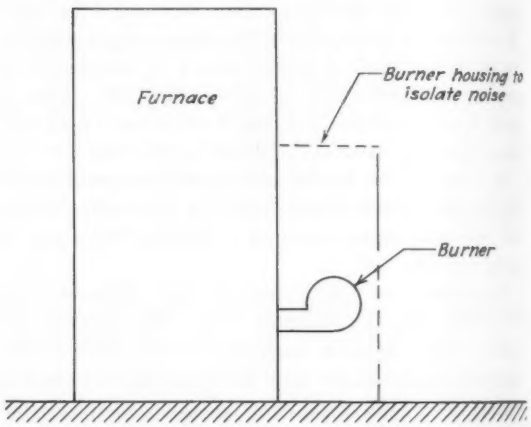
2 VIBRATION REDUCERS can be used to prevent contact between bolt and metal surfaces of supporting structure



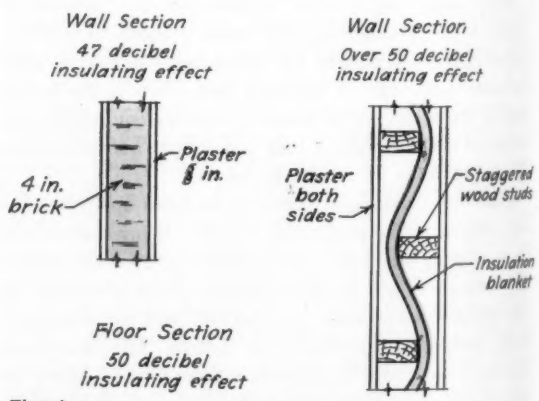
3 DECREASING BLOWER SPEEDS increases blower noise as indicated in ratio chart



4 SOUND ABSORBING INSULATION of furnace closet is a first step in sound control



5 ADDING HOUSING for conversion burner helps lower offensive noise level



6 WALL AND FLOOR insulation schemes are found effective as decibel scale ratings indicate

a) P. H. Geiger says: "The value of flexible mountings for quieting motors is well known, yet frequently they are used so that little if any quieting is secured. The object of such mountings is to prevent the transmission of vibrations from the motor to any large surface, such as a wall. If the bolt touches both the motor and the supporting frame, most if not all the advantages of the flexible mounting are lost. Bolts insulated with soft rubber will provide a remedy, or the mounting can be arranged so that no bolt touches both the supporting structure and the motor." (See Fig. 2).

b) The same authority states that it is possible to determine whether an unwanted noise is caused by the motor or by the blower. "Turn off the power and listen. Motor noise, other than that due to bad bearings, will die out immediately, whereas the blower noise will continue for a short time."

c) A blower may generate sounds that are related to the speed of the wheel, as well as sounds that are related to the number of blades in the wheel. For example, a blower operating at 500 rpm and having 24 blades will create frequencies that are related to both numbers. The problem becomes serious when the blower wheel is not balanced or is vibrating.

Fan Noise Increases with Speed

d) The noise level of a fan will increase as the speed is increased. The ASHAE Guide supplies this equation:

$$\textit{Decibel change} = 50 \log_{10} (Rpm_2/Rpm_1)$$

For example, if a given blower is increased in speed from 400 to 500 rpm, the increase in decibel level over the original level at 400 rpm will be equal to 50 log (1.25), or 50 (0.097), or 4.85 decibels. It should be understood that these are only average increases based on balanced wheels (see Fig. 3).

e) Similarly, the ASHAE Guide states, "For constant pressure and tip speed, the noise level of a given type of fan will increase with increasing fan size." The following equation illustrates the statement:

$$\textit{Decibel change} = 20 \log_{10} (Size_2/Size_1)$$

For example, if a given type of blower is operated at a constant pressure of 0.5 in. and a given tip speed, but the size is increased from a 10 in. wheel to a 16 in. wheel, the noise increase will be 20 log (1.6), or 20 (0.204), or 4.08 decibels.

f) In general, if a blower can be selected to operate near its peak efficiency, it will operate at the lowest sound level for that type and design of blower.

g) High pitched sounds emitted from a blower can be absorbed by using sound absorbing insulation on wall and ceiling surfaces of the room in which the blower is located (see Fig. 4).

The manner in which the blower is mounted in the casing, the use of vibration mountings, the permissible blower speeds, and the type of blower motor are all items that are the responsibility of the manufacturer. The heating dealer does have control, however, of the manner in which he lines up the belt on the pulley, the speed at which the blower is to operate, and the lubrication of moving parts. The diagnosis and cure will depend upon his judgment.

Combustion Noises Can Be Cured

The reduction of noise in combustion equipment, especially that designed for the furnace, is the problem of the manufacturer rather than of the heating dealer. However, the noise generated from the conversion burner equipment is the problem of the installer, since he is responsible for adapting a given burner to a given furnace, which may or may not be well adapted to the burner.

a) Combustion noise is often affected by the amount of air supplied to the burner. If excess air is supplied so that the CO_2 content of the flue gases is low, the reduction in air supply to the burner may also reduce the combustion roar.

Similarly, the combustion noise can usually be reduced by decreasing the rate of fuel input to the burner.

b) A special kind of noise problem is that which is referred to as pulsation, and may occur only when the burner is starting or when it is being shut off. This is a difficult problem for the installer to handle without the assistance of the manufacturer of the furnace. The solution may be in larger or streamlined vent pipes, reduced fuel input rates, access holes in front of the combustion chamber for admission of room air or changes in air rates to the burner. Every furnace manufacturer will have his pet cure for this difficult vibration problem that will shake the furnace as well as the house and may occur only in mild weather.

c) The suggestion has been made that in some cases a muffler could be located in the flame path.

Burner Housing May Help

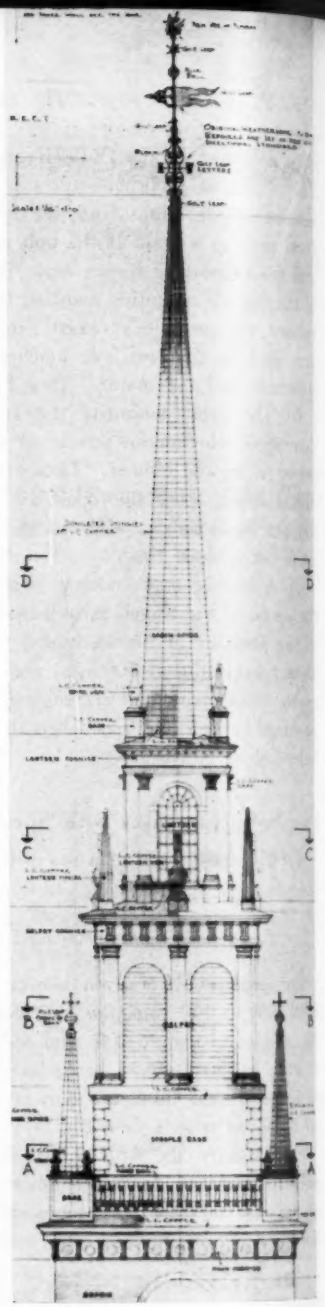
d) If the burner mechanism is exposed, as it might be on conversion burner equipment, the use of a burner housing is suggested. The housing, which is to be lined with sound absorbing insulation should be well ventilated. Otherwise, the burner and the control mechanism may become overheated (see Fig. 5).

e) As in the case of the blower, an exposed furnace in a kitchen or utility room could be enclosed in a furnace closet to isolate the sound of the burner. Some typical sections of effective wall and ceiling insulation schemes are shown in Fig. 6.

Obviously, no easy solutions can be offered which will enable a heating dealer to predict when noise will prove objectionable or to measure the intensity of the noise with any reliable yet simple instrument. Instead, the basic fundamentals of noise and its reduction are presented, and will be continued in next month's article.

Steel and Copper Restore Historic Old North Church

Erection of a hurricane-proof replica of the ancient steeple called for intricate fabrication techniques and hand work with the logical medium for durability and faithful reproduction — sheet metal



REPRODUCTION of the steeple of Old North Church is taken direct from working drawings. Specifications are given in the text as they were not intended to be reduced to this size

THE MIDNIGHT RIDE of Paul Revere has been immortalized by Henry Wadsworth Longfellow in his poem about the American Revolution. The Old North Church in Boston played an important role in starting Revere on his historic ride to warn the countryside that the British had started to move. Two lanterns hung in the steeple warned that the troops were coming across the Charles river. Thus, the steeple of the Old North Church has been a shrine known to all America and when in 1954 Hurricane Carol toppled the steeple, Americans in every state sent contributions to restore the steeple.

Steel, Copper Replace Wood

The committee appointed by the mayor of Boston decided that in the restoration of the steeple every effort would be made to duplicate the original, but that the new steeple should be more enduring and hurricane-proof. Where wood had been used in the original structure, steel and copper were specified for the new steeple. The main spire, rising 50 ft above its 125 ft base, originally had been fabricated from wooden shingles. The new spire was to be made of lead covered copper formed to simulate the original wooden shingles. Each shingle is attached to a steel frame which in turn is fastened to the foundation.

Paul E. Dutelle, Boston sheet metal contractor was called in to fabricate the copper work. He and his staff of 16 craftsmen, several with 40 years experience in this type of work, found that much of the work involved had to be done by hand. Approximately 8000 lb of 16 oz lead coated copper was used, requiring 2820 man hours to form.

Steeple Tops Three Tiers

A brief description of the steeple and its base will give a fair picture of the kind of work involved.

The spire is set upon a steeple base consisting of a belfry and lantern tiers. Each of the three tiers is decorated with copper ornaments.

The steeple base has a 21 ft octagon shaped spire fabricated from simulated copper shingles, located at each of its four corners. Each of these spires is topped with a large round ball surmounted with a cross (see illustration). The ball and cross were fashioned from lead coated copper and then covered with gilt leaf. Each of the four spires is circled by three copper urns standing 30 in. high. Each spire is joined to its neighbor by a hand rail and vertical posts, all fabricated from lead coated copper.

Louvers Are Lead Coated Copper

The next tier is the belfry section which is 13½ ft square and rises 29 ft. Each face of the section contains two louvered openings 11 ft high. The louvers are formed from lead coated copper sheets. The belfry section is topped with 10 ft copper lantern finials at each of its four corners. Each of the lantern finials is topped by a large acorn. Between each finial is an 8 ft lantern urn with a flame top (see illustration).

The third tier is the lantern section which is also four sided (8 ft square) and rises 15 ft above the belfry section. Each face of this section contains a 10 X 4 ft window. The lantern section is topped with a spire urn located at each of its four corners. The spire urn is 3 ft 8 in. in height and is set upon a 3 ft square copper base.

Original Weathervane Restored

Resting upon the lantern tier is the main spire which is octagon in shape with a diameter of 7 ft at the base and tapering to 1 ft at the peak, 50 ft above. The peak of the main spire is capped with the original weathervane which has been restored in every detail and appears just as it did in 1732. The weathervane rises another 16 ft. The total height from the ground to the tip of the weathervane is 191 ft.

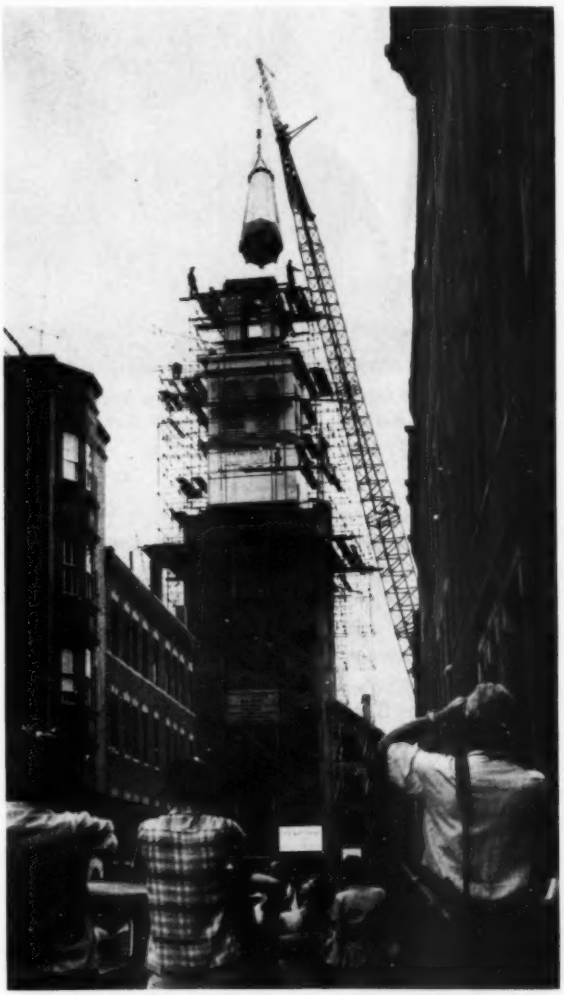
All trim, flashing, roofing and deck was made from copper sheets. Every trick known to the copper trade was called upon to duplicate the architectural designs popular 300 years ago.

The basic copper work was fabricated at the shop with final assembly at the site. The main spire and weathervane — a total of 66 ft — had to be raised to its foundation, 125 ft above the sidewalk. The largest crane in the city of Boston was called upon to hoist this section into place.

Research for the restoration was made by Charles R. Strickland, Boston architect who drew the plans and wrote the final specifications. All the copper used was donated by Revere Copper and Brass, Inc.

The spinnings and stampings for the ornamental urns and finials on the base of the spire were fabricated by Miller & Doing.

EIGHT FOOT LANTERN URNS with flame tops are inspected by Paul E. Dutelle before being set in place on the second tier finials



HOISTING THE STEEPLE called for the largest crane available. It was loaned for the job by the Boston Navy Yard

Central Heating

THIS STRUCTURE had its heating systems modernized — after 35 years

CLOSE CLEARANCES were among the problems encountered in installation of the horizontal furnaces in attic and other locations

OLD WOODEN GRILLES for ventilating the basement were replaced by metal grilles

THROUGHOUT THE COUNTRY, particularly in the eastern sector, are thousands of cold water flats, heated by an odd conglomeration of units. In many instances they lack central heating because the owners don't think it is possible to install a central system.

Dombrady Furnace Co., Cleveland, O., recently ran into such a situation. Today, the tenants of the structure involved for the first time are enjoying the benefits of central heating because Laddie Holub and Louis Dombrady, co-owners of the heating company, weren't convinced the job couldn't be done.

Building Divided into 9 Heating Zones

The 35-year-old apartment building on Cleveland's west side has four commercial stores and four suites on the first floor, two basement suites, and one master suite and eight three-room utility suites on the second floor.

For 35 years each store and each suite had been heated by some sort of gas heater, some models vented, some unvented. In some instances these units violated the city heating code. When city inspectors objected, the door was opened to central heating of the building.

The Dombrady Co. carefully studied the heating requirements and decided on nine gas-fired furnaces to do the job. The four stores, the four suites behind them and the two basement suites are now being heated with four 90,000 Btu basement furnaces. Five 80,000 Btu horizontal units heat the nine upstairs suites.

This job naturally required departures from normal installation procedure. Collapsible stairways were placed in five areas for installing and servicing the five horizontal furnaces. Work platforms were built in the space between ceilings and roof for the installers and for future service crews. Ventilators were installed at the end of the attic space. Space limitations required that duct work be made in short lengths.

High Wall Registers Used

High wall registers have been installed in every room —a total of 35 in the upstairs suites—and ten cold air

Meets Complex Needs of Cold Water Flats

A few departures from normal installation procedures cured a comfort problem which building owners didn't think could be remedied

By Alice Holton
Perfection Industries, Inc.

CHECKING ONE OF FOUR basement installations in the apartment building is Aubrey Taylor, city heating inspector, as dealer Laddie Holub looks on

returns were located upstairs at baseboard level. Downstairs, there are 24 warm air baseboard registers and eight cold air returns. Eight diffuser registers are used in the basement suites. There are two cold air returns in the basement area.

In the basement suites it was necessary to bring the ductwork through bedrooms and kitchens — the only places in the building where the ductwork is exposed, and this condition can be corrected by a minor decorating job. Tenants feel it's a small price to pay for the benefits of central heating.

A master meter and a master electric board were installed in the basement. There is one thermostat for every two suites but each tenant can vary his own supply of heat by adjusting his register damper.

Advantages — Economy, Health, Comfort

The owners of the apartment building as well as the tenants are already sold on the advantages of the new heating system. Most important, it is much safer than the old system. The filtered heat is cleaner, and the constant flow of heat is a definite improvement as far as health standards are concerned. Important to everyone is the fact that the new system will bring about fuel economies.

Mr. Holub expects the central heating system to cut the gas bill for the entire apartment building by about 50 percent through more efficient distribution of heat. He pointed out that one suite which formerly used an 85,000 Btu circulating space heater and another which was heated by two 35,000 Btu space heaters, now are heated by a single 80,000 Btu furnace. Similar waste of heat was prevalent throughout the building. So unsatisfactory was the old system that many of the tenants had to call on their range ovens to heat their kitchens.

The Dombrady staff are glad they undertook this job, not only because of the satisfaction of a tough job well done, but also because of the valuable experience they gained in solving the intricacies of a non-routine installation — experience they expect to utilize in the future when they tackle the next difficult job.

This is the third in a new group of articles to appear in American Artisan under the general heading " 'Training Program' . . . in Print." These articles are especially prepared to aid dealers in developing "know how" in all phases of their organizations. Previous articles dealt with technical applications and solutions to problems found by engineers. . . This month we turn to a phase of business management.

Profits Grow with Procedure Control

A constant check on all details maintains inventories, reduces time and materials waste, and fosters an inventiveness which pays off in dollars and good will for this dealer-contractor

A REPUTATION for making only quality installations is accompanied by the responsibility of checking and rechecking every detail that enters into handling procedures which arise from the prospect's first sign of interest through the various steps necessary to complete the sale, select the equipment, fabricate the ductwork, install the system and make the final test.

One dealer-contractor who operates on this theory is Richard W. Friday of Rochester, N. Y.

Once the prospect recognizes the extra features of the heating system recommended and described by Mr. Friday in his opening sales approach, he is invited to the company's showroom where different model furnaces are on display along with gas and oil burners and other

THE FIRST STEP is engineering. Careful estimate of the heat loss determines the duct location on the house plan

mock-ups that help the prospect visualize what kind of equipment is recommended for his home and how the equipment will operate. One of the demonstration pieces is a small display that explains the blower and shows how air delivery is varied to match the rate of heat loss, whether the outside temperature is below zero or above 40 deg. Mr. Friday explains, "The demonstration is never hurried. I constantly check with the prospect to be sure the points I am making are understood. This way I build equipment acceptance and confidence. Later, when the prospect has become a customer, he becomes my advertising medium among his associates. The knowledge they have picked up in our conversations gives customers added prestige when they discuss heating systems with their friends."

Job Control Is Complete

No business system can be successful if it is incomplete. Thus, the Friday system of checking the job all along the line from start to finish has many contributing procedures that help minimize the margin of error. Each job starts with a job number; then comes a thorough estimate of the heat loss; next, the best of several air distribution plans is selected for laying out the duct system.

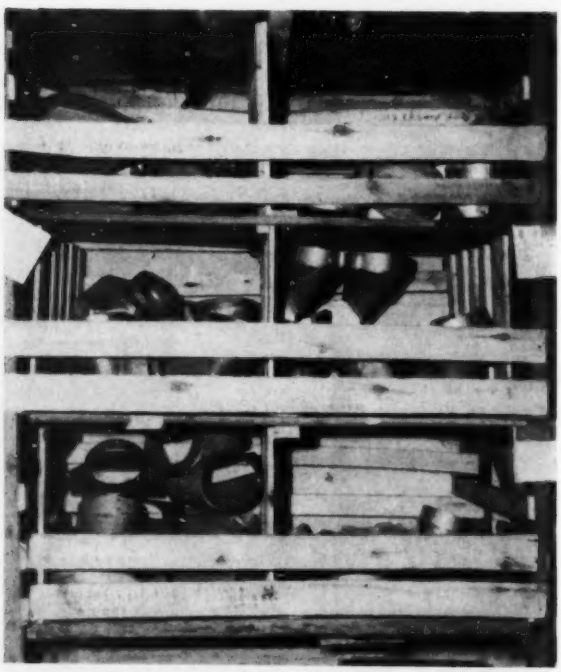
After the basic engineering has been completed, a parts and materials list is prepared. Everything required is listed, and the list is checked against the floor plan of the equipment layout before it goes to the shop. Each item on the list is taken from stock and placed in a special location near the loading door. As each part is brought to this spot, it is checked on the parts and materials list. To keep small parts from becoming mixed with other orders awaiting delivery, they are placed in cardboard boxes with the job number prominently displayed. All ducts are placed in large cardboard boxes which are saved for this purpose from furnace deliveries. Handling the duct sections this way makes it possible to transfer the entire order with a minimum of handling.

Just before the order leaves for the job site, a final check against the parts needed and the material list is made. This procedure keeps the job moving at a steady pace and reduces those time consuming trips back to the shop for "that missing fitting."

Some of the "internal checks" are routine procedure at the Richard W. Friday Co. One of these checks is made in the fitting storage section of the shop. Each fitting bin has a record card which shows the size of the fitting and the current inventory. The record card is kept in a 5 × 6 in. sheet metal receptacle. Each time a fitting is removed, the worker crosses off the figure shown and

CUSTOMERS ARE SHOWN the actual equipment illustrated in the mock-up on the shelf

REGISTERS AND GRILLES are stacked according to size and part number. Inventory is easily checked against the bin capacity



FITTING BIN uses record card showing size and current number of fittings remaining in bin. Periodic check tells when to replenish stock

enters the new count. This procedure also proves quite helpful when the annual inventory is taken at the end of the fiscal period.

Another tool that helps maintain sufficient stock on hand and readily available is the register storage rack. Each size is stored in a bin on which the size and manufacturer's part number are marked. A running inventory is kept on the nearby door frame.

Special Tools Save Time

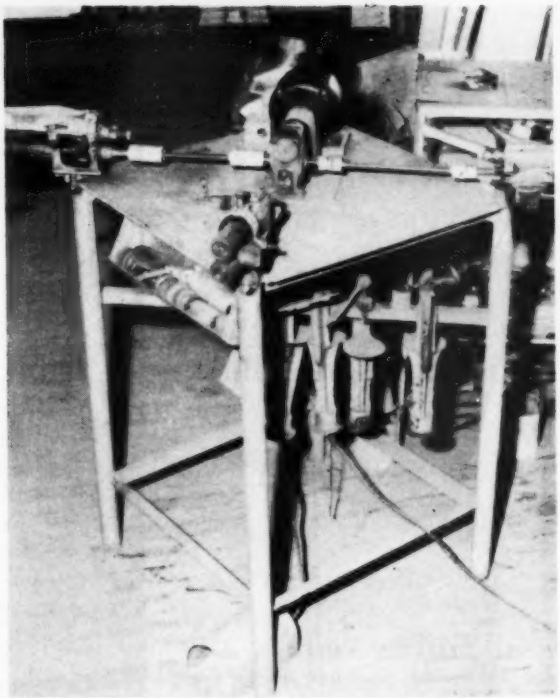
Shop procedures are constantly checked to find methods that will eliminate time and speed up the fabrication of fittings. Several special tools have developed from investigations made by Mr. Friday. One of the tools is a hand nibbler which has been converted to a stationary bench tool (see illustration). Many curved parts for fittings are quickly cut to shape with the aid of a template of the part desired. Because the nibbler need not be picked up or laid down, the part being cut can be held securely by both hands. The template assures each part being a duplicate of the preceding part.

Edging Table Improves Efficiency

Another tool developed by Mr. Friday is a power operated rotary edging table. He has mounted a used motor to a gear box from which three crank shafts extend, one to each side and one straight ahead of the motor gear box assembly. The crank shafts are coupled to edging tools. The motor is controlled by a foot switch that can be moved to any convenient position so the operator can use the edging tool of his choice without having to alter his position to turn the motor on or off after each edge has been completed. The underside of the stand contains storage space for other types of edging tools for use when needed. They can be fastened into position on the stand with hand clamps. Also on the underside of the stand is a shelf containing spare turning wheels for the edging tools.

These are a few of the improvements incorporated in

STAND MOUNTED NIBBLER and a template contribute to the accuracy of the duplicate curved parts for fittings



MOTORIZED HAND TOOLS cut fitting fabrication time. Spare parts are kept on shelf just under table top

the shop policy that helps assure quality parts at a minimum of cost to the customer.

The shop is not alone in its development of a course that leads to efficient operation. The office also is kept functioning under a system of check procedures that bring about low overhead, purchased stock inventory control and accounts receivable follow-up that keeps the delinquent customer list to a minimum.

Filing System Reviewed Periodically

Overhead costs are kept low by a system of filing that comes up for a periodic review. Some procedures are reviewed weekly, others monthly. In every case, the item concerned comes to the attention of the office manager who takes the prescribed steps to bring about the desired solution. An example of this procedure is the handling of collections for service calls. If the customer has a "charge account," a notice is sent each week reminding him that service has been rendered and that the account is past due. The system that requires the review of these accounts each week has resulted in the extension of the "charge" privilege with a very low rate of delinquent payments.

Another office procedure that helps maintain the purchased stock at the desired level is the file cards on the equipment being sold. These cards show when outgoing stock has placed a drain on the "on hand" stock. When this point is reached a check is made against the anticipated need and an order is written for the equipment needed to bring the stock back to its operating level.

A practice of billing the same day a job is completed or service rendered has proven to be very effective in maintaining collections. Time charged to each job is checked against the original estimate and when irregularities are noticed, future estimates are made with the correction factor added.

Leads for heating systems are obtained from four general sources; word of mouth through satisfied customers, newspapers, telephone contacts and radio. The radio program has been quite successful because the

WHAT'S YOUR PROBLEM?

The American Artisan's 'TRAINING PROGRAM' — IN PRINT will explain the whys and wherefores of some of the dealer's problems, tell what to do about them. You will want the members of your organization to study these articles carefully, keep them for future reference . . . . If you have a problem you'd like to see covered, write Clyde M. Barnes, Editor, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

FINAL DELIVERY CHECK is made just before the equipment leaves the shop

script ties in the company's name with comments made by the Sergeant Friday of Dragnet fame. The newspaper ads often are written in this same vein. Both methods of reaching the public have contributed to the growth of the company, which will celebrate its 28th anniversary next April.

Merchandising Know-How Developed Early

Mr. Friday founded the company when he was 19 years old after completing a four year apprenticeship and several years as a journeyman sheet metal man for another of Rochester's leading sheet metal contractors. The first jobs undertaken by the young company were limited to sheet metal work alone but when forced warm air heating began to grow in popularity in the 30's, Mr. Friday became a heating dealer. His first experience in mechandising heating equipment taught him the value of letting people know "who you are, what you can do and how to reach you." He has followed this theme in allocating the money for his advertising budget each year.

Though warm air heating now is responsible for the bulk of the annual dollar volume, sheet metal specialties still play an important part in the shop operations. Recently a local concern needed some special grilles for controlling light in its plant. The specifications for these grilles called for ¾ in. vanes or bars spaced ¼ in. off center and tilted at a 5 deg angle. Inside measurements of the grilles were approximately 3 in. high × 4¾ in. long with a 9/16 in. border. Tolerances had to be held to 0.015 and of course the cost had to be held within reason. The material was 22 gage galvanized steel.

Resourcefulness Eliminates Die Cutting

In attempting to set up a workable technique to produce a small initial order, Mr. Friday found that the cost of having dies made for cutting and forming was prohibitive, so all parts were cut in an ordinary 36 in. squaring shear. Notching was done on a small kick press and forming was done on the same press with dies of cold rolled steel made by his mechanic.

Because of the close tolerance, jigs were made for assembling and while the original order was for only 76 grilles, repeat orders in quantities of 50 to 900 have brought the total number produced to well over 4000. Careful checking of each operation completely eliminated rejects and resulted in a substantial profit from a job that probably would have been rejected by many contractors.

Making a Transforming Boot on a Tapered Hood

. . . for applications such as in dust collection systems where the hood should be close to the source of air contamination

THE DRAWING (Fig. 1) is a suction system for a tumbling barrel operation. The conveying velocity for this type of dust collection is from 3500 fpm to 4500 fpm.

In the control of fine dust as produced by this cleaning process, the hood should be as close to the source of air contamination as possible.

The air should be directed past the dust source and into the hood with a velocity at the point of dust origin greater than the velocity of escape of the dust particles.

Consideration must be given the location of the hood, so that the operator is never between the dust source and the exhaust hood. This will necessitate a consideration of drafts from open windows and doors in the location of the tumbler machines. Dust collection units are manufactured to meet a wide range of cfm requirements. To select the size suited to the job shown on the drawing, the procedure is as follows:

Lay out the definite location of the equipment, design a suitable hood, determine the duct sizes from the design air volume and velocity. Select a unit collector to suit the design requirements.

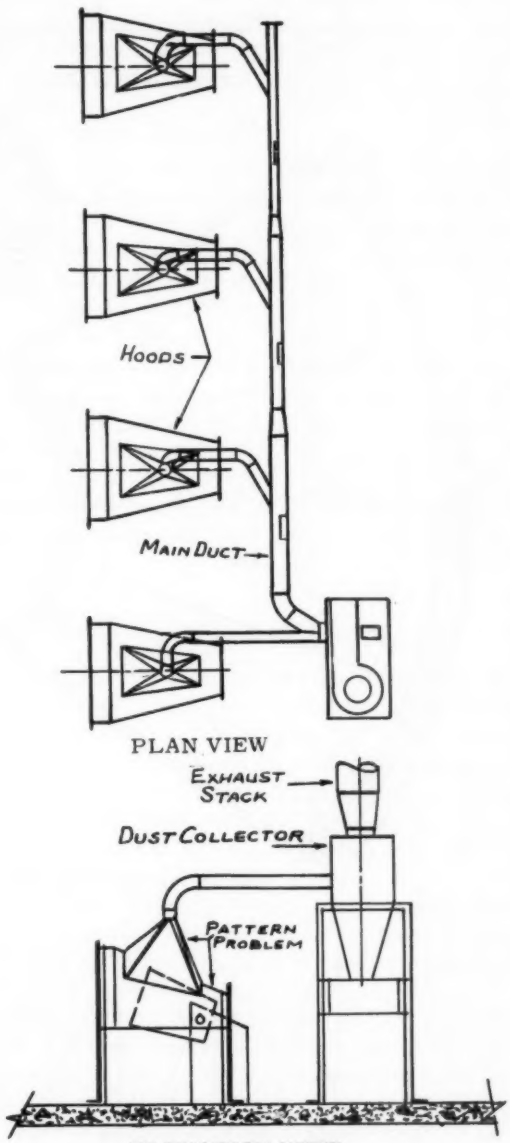
From the calculated static pressure of the entire system, the motor, pulleys and drives can be determined.

Hood design for tumbling barrel operations must take into consideration the position of the tilted barrel and its supporting framework. Usually the connecting transforming boot must be slanted in the same direction as the barrel in order to maintain the desired air velocity.

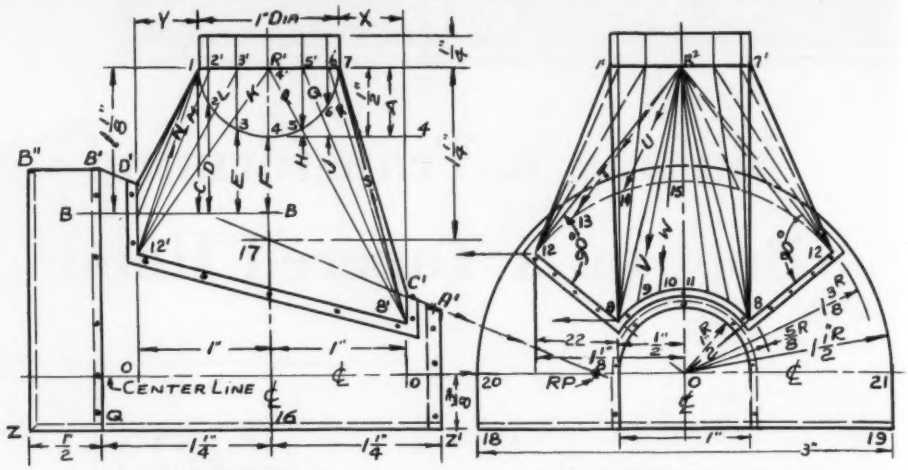
The following is a step by step procedure to the pattern problem solution:

Simplified Method Drawing, Figs. 2 and 3 —

a) Draw the 3 in. horizontal line Z Z', (Fig. 2). From Z measure ½ in. to the right and mark the point

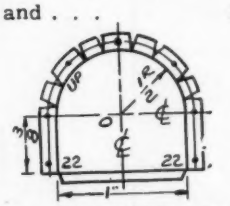


1 PLAN AND ELEVATION views of a suction system for a tumbling barrel operation show application of the pattern problem

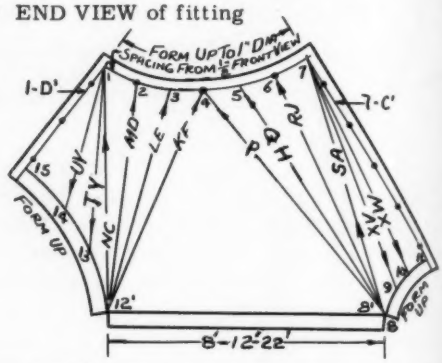


2 FRONT VIEW and . . .

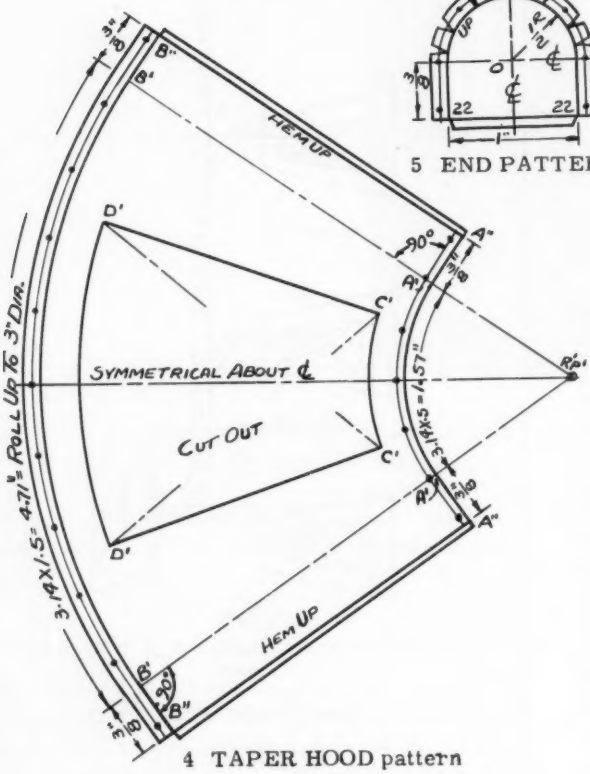
3 END VIEW of fitting



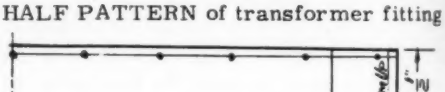
5 END PATTERN



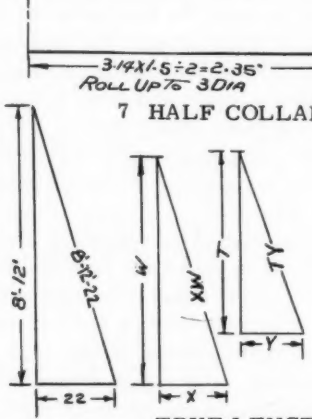
6 HALF PATTERN of transformer fitting



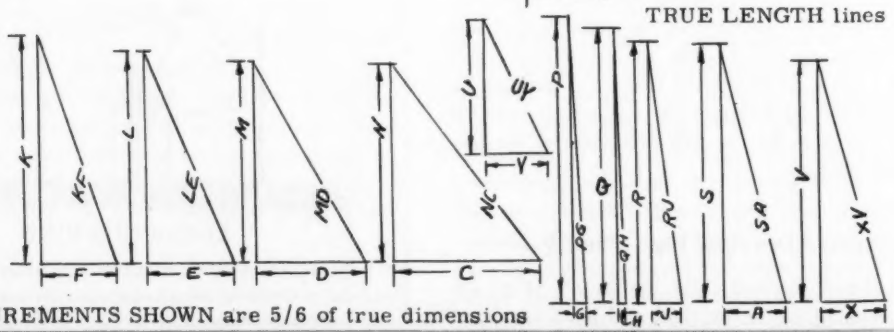
4 TAPER HOOD pattern



7 HALF COLLAR pattern



TRUE LENGTH lines



MEASUREMENTS SHOWN are 5/6 of true dimensions

Q; through points Z, Q, Z′, draw lines perpendicular to line Z Z′. From points Z and Q measure up 1⅞ in. and mark the points B″ and B′. From Z′ measure up ⅞ in. and mark the point A′. Draw lines A′ B′ and B′ B″.

b) From point Q measure 1¼ in. to the right and mark the point 16. Through this point draw the line marked CL perpendicular to line Z Z′. At the intersection point of the center line and line A′ B′, mark the intersection 17. From point 17 measure up 1¼ in. and mark the point R′. Through this point draw a line perpendicular to and extending on both sides of the center line.

c) With given radius ½ in. and point R′ as center, draw a half circle. Divide the half circle into six equal spaces and mark the points, 1, 2, 3, 4, 5, 6, 7. From the vertical center line, measure 1 in. to the right and left of the center line and draw work lines parallel to the center line to intersect the taper line A′ B″. Mark the intersection points D′ and C′. Draw the lines 1-D′ and 7-C′.

d) To the right of the front view (Fig. 2) draw the end view (Fig. 3) vertical center line CL. Draw a line to the right and on the same horizontal plane as line Z Z′ (Fig. 2). From the center line, (Fig. 3) measure 1½ in. to the right and left and mark the points 18 and 19. From line 18-19, measure up ⅜ in. on the center line and establish the point O. Through this point draw a center line extending through both the front and end views. On Fig. 3 mark points 20 and 21 at a distance of 1½ in. to the left and right of point 0 on the horizontal center line. On Fig. 2 measure 1 in. to the right and left of the point where the horizontal and vertical center lines intersect. Mark these points O.

e) With point O (Fig. 3) as center and radius 1½ in., draw a half circle to intersect the horizontal center line at points 20 and 21. Draw lines 18-20 and 19-21. With point O as center and radius ½ in., draw a half circle; draw vertical lines tangent to the half circle to intersect line 18-19.

f) With radius O C′ (Fig. 2) and point O (Fig. 3) as center, draw an arc to the right and left of the center line. From the vertical center line measure ½ in. and draw a line parallel to the center line to intersect arc O C′; mark these points 8. Project point 8 (Fig. 3) to the left and parallel to the line Z Z′ to intersect line O C′ (Fig. 2); mark this point 8′.

g) With a compass, measure line O D′ (Fig. 2) and with point O (Fig. 3) as center, draw an arc to the right and left of the vertical center line. From the vertical line measure 1⅛ in. to the right and left, and draw a line parallel to the vertical center line to intersect the arc; mark these points 12. Project point 12 parallel to line Z Z′ to intersect line O D′ (Fig. 2); mark this point 12′. Draw the lines 8-12 (Fig. 3) and line 8′-12′ (Fig. 2).

h) From line 1-7 (Fig. 2) measure down 1⅛ in. and draw the line B B parallel to line 1-7 and to the left of the center line.

i) From line 1-7 (Fig. 2) measure down a distance equal in length to the horizontal distance from the vertical center line to point 8 (Fig. 3) which is ½ in., and draw the line 4-4 parallel to line 1-7 and to the right of the center line.

j) Through the equally spaced points 1, 2, 3, 4, on the half circle (Fig. 2) draw lines parallel to the center line to intersect lines 1-7 and B B. Mark the distances from the half circle to line B B with the letters C, D, E, F. Through the equally spaced points 5, 6, 7, on the half circle, draw lines parallel to the center line to intersect line 4-4 and mark the distances from the half circle to line 4-4 with the letters H, J and A.

k) From point 12′ (Fig. 2) draw lines to points 1, 2′, 3′, R′ on line 1-7, and mark the lines K, L, M, N. From point 8′ (Fig. 2) draw lines to points R′, 5′, 6′, 7 on line 1-7, and mark the lines P, Q, R and S.

l) Extend line 1-7 (Fig. 2) to cross the vertical center line of Fig. 3. Where the intersection occurs, mark the point R^2. Transfer distances 1-2′; 2′-3′; 3′ R (Fig. 2) to the left side of the vertical center line (Fig. 3) on the extended line. Transfer distances R 5′; 5′-6′; 6′-7 (Fig. 2) to the right side of the vertical center line (Fig. 3) on the extended line. Mark the extreme left point as 1′ and the extreme right point as 7′.

m) Divide the arc 8-11 (Fig. 3) into 3 equal spaces, and mark the points 8, 9, 10, 11. From R^2 on line 1′-7′, draw lines to points 9 and 10 and mark the lines V and W. Divide the arc 12-15 into 3 equal spaces and mark the points 12, 13, 14, 15. From R^2 on line 1′-7′, draw lines to points 13 and 14, and mark the lines T and U.

n) Extend the line A′ B′ (Fig. 2) to intersect the horizontal center line marked C L (Fig. 3) and mark the point R P.

To Lay Out the Taper Hood Pattern, Fig. 4 —

a) Draw the horizontal center line CL; mark the right end as point R′P′. With a compass, measure line RPB′ (Figs. 2 and 3). With point R′P′ (Fig. 4) as center, draw a long arc equal to RPB′ extending on both sides of the center line. Measure distance RPA′ (Figs. 2 and 3). With point R′P′ (Fig. 4) as center, draw an arc equal to RPA′ extending on both sides of the center line.

b) Calculate the length of the 1 in. and 3 in. half circles (Fig. 3, line 20-21) by multiplying the given radii by the constant 3.14. Thus, 3.14 × 1.5 in. equals 4¾ in., and 3.14 × 0.5 in. equals 1 9/16 in.

c) Working from the center line (Fig. 4) measure half the calculated lengths of the 3 in. and 1 in. half circles on both sides of the center lines and mark the points B′B′ and A′A′ respectively.

d) From points A′B′ measure the given length of the straight section which is ⅜ in. as shown on Fig. 2, and draw lines A″B″ on both the top and bottom ends of the pattern.

e) With a compass, measure lines RPC′ and RPD′

(Figs. 2 and 3), and with point R′P′ (Fig. 4) as center, draw arcs extending above and below the center line. Transfer arc lengths 11-8 and 15-12 from Fig. 3 to arcs R′P′-C′ and R′P′-D′ (Fig. 4) and mark the points C′C′ and D′D′.

To Develop the End Pattern, Fig. 5 —

a) Draw the 1 in. horizontal line 22-22. From either point 22 measure ½ in. in and draw the vertical center line marked CL. From line 22-22, measure up ⅜ in. and draw the horizontal center line also marked CL. Mark the intersection of the center lines O.

b) With O as center and given radius ½ in. (Fig. 3) as radius, draw a half circle above point O to intersect the horizontal center line. Draw lines connecting the center line intersection points and points 22.

To Develop the Transformer Pattern, Fig. 6 —

a) Draw a right angle. Transfer line 8′-12′ from Fig. 2 to the vertical leg, and distance 22 from Fig. 3 to the horizontal leg. The hypotenuse 8′-12′-22 is the true length line. Draw a horizontal line equal in length to the developed line 8′-12′-22 and mark the line 8′-12′-22′.

b) Measure line P (Fig. 2) and with point 8′ (Fig. 6) as center, draw an arc above and to the left of point 8′.

c) Transfer line K and fall distance F from Fig. 2 to the vertical and horizontal legs of a right angle. The hypotenuse KF is the developed line. With point 12′ (Fig. 6)as center, and radius KF, draw an arc to intersect arc P and mark the point 4.

d) Line L and fall distance E are transferred from Fig. 2 to the vertical and horizontal legs of a right angle. The hypotenuse LE is the developed line. With point 12′ (Fig. 6) as center, and radius LE, draw an arc to the left of point 4. Set a compass at arc length 4-3 on the half circle (Fig. 2) and with point 4 on Fig. 6 as center, cut the arc LE and mark the point 3.

e) From Fig. 2, transfer line M and fall distance D to the vertical and horizontal legs of a right angle. The hypotenuse line MD is the developed line. With point 12′ (Fig. 6) as center, and radius MD, draw an arc to the left of point 3. With arc length 3-2 on the half circle (Fig. 2) as radius, and point 3 (Fig. 6) as center, cut the arc MD and mark the point 2.

f) Line N and fall distance C are transferred from Fig. 2 to the vertical and horizontal legs of a right angle. The hypotenuse line NC is the developed line. With point 12′ (Fig. 6) as center and radius NC, draw an arc to the left of point 2 (Fig. 6). Measure arc length 2-1 on the half circle (Fig. 2) and with point 2 (Fig. 6) as center, cut the arc NC and mark the point 1.

g) The line Q and the fall distance H are transferred from Fig. 2 to the vertical and horizontal legs of a right angle. The hypotenuse QH is the developed line. With point 8′ (Fig. 6) as center and radius QH, draw an arc to the right of point 4. With arc length 4-5 (Fig. 2) as radius, and point 4 (Fig. 6) as center, cut the arc QH and mark the point 5.

h) Transfer line R and fall distance J from Fig. 2 to the vertical and horizontal legs of a right angle. The hypotenuse RJ is the developed line. With point 8′ (Fig. 6) as center, and radius RJ, draw an arc to the right of point 5. With arc length 5-6 as radius, and point 5 (Fig. 6) as center, cut the arc RJ; mark the point 6.

i) From Fig. 2, transfer line S to the vertical leg of a right angle, and fall distance A to the horizontal leg. The hypotenuse line SA is the developed line. With point 8′ (Fig. 6) as center and radius SA, draw an arc to the right of point 6. With arc radius 6-7 (Fig. 2) as radius, and point 6 (Fig. 6) as center, cut the arc SA and mark the point 7.

j) Transfer lines V and W from Fig. 3 to the vertical legs of right angles and the distance marked X at top right of Fig. 2 to the horizontal legs. The hypotenuse lines XV and XW are the developed lines. With point 7 (Fig. 6) as center, and radius XV, draw an arc to the right of point 8′. With line XW as radius, and point 7 (Fig. 6) as center, draw an arc to the right of line XV. Measure arc length 8-9 (Fig. 3) and with point 8′ (Fig. 6) as center, cut the arc XV and mark the point 9. With point 9 as center cut the arc XW and mark the point 10.

k) With line 7-C′ (Fig. 2) as radius, and point 7 (Fig. 6) as center, draw an arc to the right of point 10. With arc length 10-11 (Fig. 3) as radius, and point 10 (Fig. 6) as center, cut the arc 7-C′ and mark the point 11.

l) Transfer lines T and U from Fig. 3 to the vertical legs of right angles and fall distance Y at top left (Fig. 2) to the horizontal legs. The hypotenuse lines TY and UY are the developed lines. With point 1 (Fig. 6) as center, and radius TY, draw an arc to the left of point 12′; with arc length 12-13 (Fig. 3) as radius and point 12′ (Fig. 6) as center, cut the arc TY and mark the point 13. With point 1 (Fig. 6) as center, and radius UY, draw an arc to the left of point 13. With arc length 13-14 (Fig. 3) as radius, and point 13 (Fig. 6) as center, cut the arc UY and mark the point 14.

m) Measure line 1-D′ (Fig. 2) and with point 1 (Fig. 6) as center, draw an arc to the left of point 14. With arc radius 14-15 (Fig. 3) as radius, and point 14 (Fig. 6) as center, cut the arc 1-D′ and mark the point 15.

n) Through the developed points draw the pattern outline.

To Lay Out the Collar Pattern, Fig. 7 —

a) Calculate the length of the collar by multiplying the given radius by 3.14 and adding twice the length of the straight section, thus: (3.14 × 1.5) plus (0.375 × 2) equals 4.71 plus 0.75 equals 5½ in.

b) Draw a rectangle equal to the calculated stretch-out by the given collar length which is 5½ in. by ½ in. Note: a half pattern is drawn to conserve space.

Add seams and joints, lay out rivet holes, and mark the patterns for fabrication.

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f the desirable
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COMFORTROL works on a very efficient principle. It *mixes* cool air with warm air in a ratio that provides the exact temperature called for by indoor-outdoor thermostats. It supplies this warmth continuously at the same rate it escapes through walls and windows. Waterbury COMFORTROL By-Pass Heating takes maximum advantage of perimeter heat distribution and zone controls.

Your customers get absolutely constant comfort in every room. They have a continuous supply of fresh, clean, humidified air. There are no hot and cold cycles or drafts. In tests, temperature has varied less than one degree between floor and ceiling.

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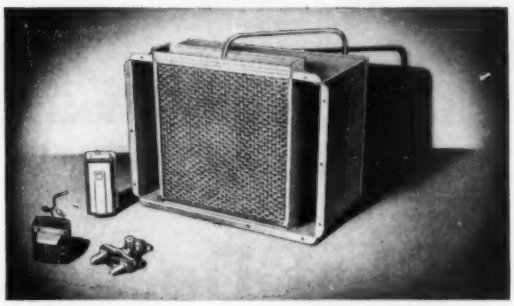

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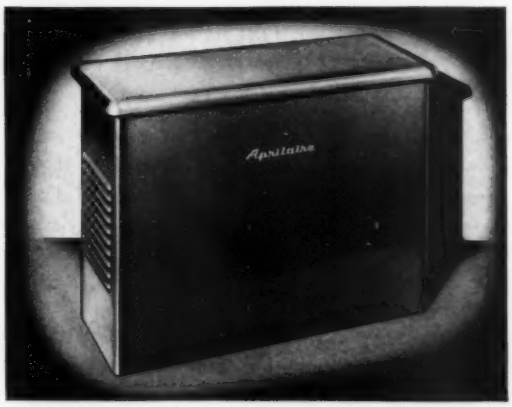

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What Does the Future Hold?

Here's a report on the outlook for heating and cooling dealers and contractors, as reported to a conference of heating-cooling magazine editors by Minneapolis-Honeywell Regulator Co. following extensive investigation

"THERE ARE OTHER companies and groups who share our confidence in the industry's future and are backing up this confidence as best they can within the limitation of the funds, time and manpower they can devote to the cause. But the job that has to be done is too big for any one company—it's too big for three or four or half a dozen companies. If our industry is going to capitalize on the opportunities that now exist, if it is going to gain its rightful stature in the American scheme of things, and continue to show progress, then the job that lies ahead must have the wholehearted support of the entire industry." So said K. L. Wilson, manager, Heating Controls division, Minneapolis-Honeywell Regulator Co., as he addressed an editorial conference of representatives from leading heating and cooling magazines.

Mr. Wilson's comments were borne out by other members of the administrative staff of Minneapolis-Honeywell as they voiced convictions formulated by data uncovered by the company's research program.

New Way of Life

Karl W. Schick, sales manager, Heating division, said: "Important and exciting things are happening in American living today. The fact is, a whole new way of life is emerging —a way of life that is refreshingly different from anything we've ever known before. It is being brought about by the great social and technological advances that characterize what we call the atomic age.

"To those of us in the heating and air conditioning industry, this transformation in living has double significance. First, it is affecting each of us personally. Second, it already is exerting strong and beneficial effects upon our industry and is bound to have a still greater impact in the years ahead.

"Of greatest significance to us is the fact that health and comfort are becoming increasingly important to the American people. We can see the trend in the design and styling of sparkling new homes with their built-in 'liveability' and emphasis on modern conveniences. We can see it in the expansion of air conditioning into a boom industry. We can see it in the growing acceptance of such advanced concepts of comfort as zone control and anticipating control systems.

Public Is Comfort Conscious

"Air conditioning has been and still is a powerful factor in stimulating the public's interest in comfort. Unlike heating, air conditioning is still a luxury and it has to be sold. This hasn't been easy and still isn't easy. But the tremendous adver-

(*Continued on page* 88)

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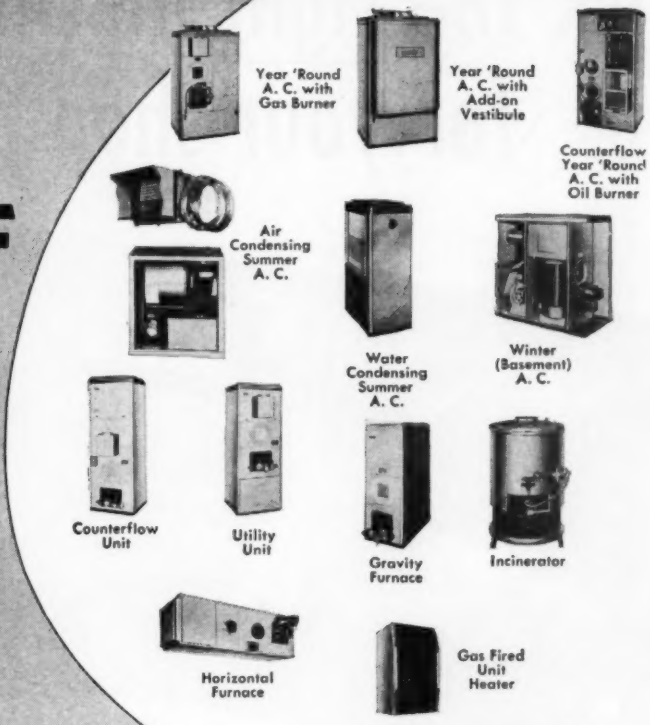
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Counterflow Year 'Round A. C. with Oil Burner
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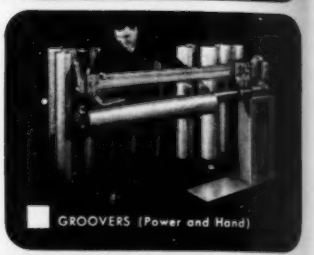
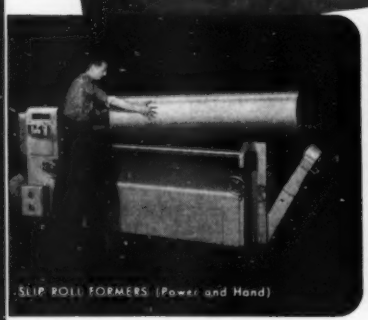


☐ GROOVERS (Power and Hand)

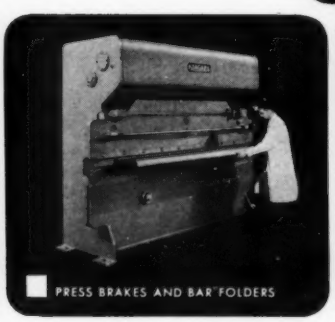
☐ HAND TOOLS (Snips, hammers, groovers, etc.)

☐ SQUARING SHEARS (Power and Foot)



☐ SLIP ROLL FORMERS (Power and Hand)

☐ RING AND CIRCLE SHEARS



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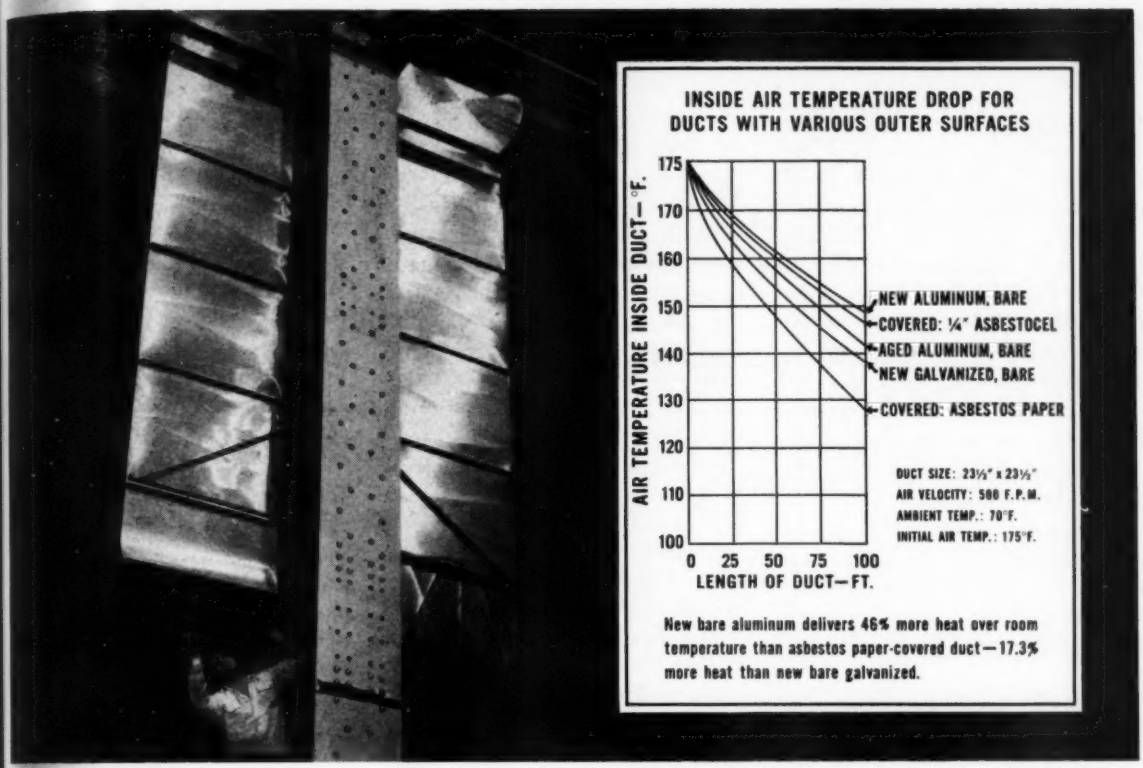

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As THE CHART above shows, new bare duct made of Kaiser Aluminum delivers *more* heat—in most cases, far more—than any other duct of comparable cost. This is due to aluminum's low emissivity, low friction loss, and high thermal reflectivity.

When used in air conditioning units, Kaiser Aluminum duct delivers more cool air.

This increased efficiency lowers fuel and power bills for your customers—gives *you* a big competitive advantage!

And check these other big advantages! 1) Pound for pound, aluminum covers three times the area of galvanized. 2) Its light weight cuts installation costs as much as 12% due to greater speed and efficiency in transporting, handling, erecting. 3) Aluminum offers up to 20% saving in friction loss. 4) Same BTU delivery with as much as 14% smaller duct sizes—another saving in metal, fabrication, space and operating costs. 4) Resists corrosion—will not stain adjacent surfaces.

Kaiser Aluminum takes perfect Pittsburgh Lock Seam! Can be fabricated faster and easier by same methods and equipment as other metals.

A Kaiser Aluminum engineer will gladly show you even more advantages of Kaiser Aluminum Utility Sheet. Simply contact any Kaiser Aluminum sales office, located in principal cities, or one of our distributors. Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office,* Palmolive Bldg., Chicago 11, Illinois; *Executive Office,* Kaiser Bldg., Oakland 12, California.

Important information about gauge sizes! The Brown & Sharpe gauge used for aluminum is two numbers *higher* than the Standard gauge used for galvanized. Thus, for example, 18 ga. aluminum and 20 ga. galvanized are the same thickness (.040").

Send coupon today for free folder. Helps you take full advantage of aluminum's unique combination of properties. Availability charts on Kaiser Aluminum Utility Sheet in both flattened and coiled sheets, including thicknesses, weights, etc. Also contains weight and coverage comparisons for aluminum and galvanized.

Kaiser Aluminum & Chemical Sales, Inc.
5972 Kaiser Building, Oakland 12, California

Please send _____ free copies of folder entitled "Kaiser Aluminum Utility Sheet."

Name _____

Address _____

Company _____

City and State _____

New AC Distribution Patterns Developing

(*Continued from page 84*)

tising programs and publicity campaigns carried out in support of the sales effort have carried the story of comfort, health and cleanliness to the public. As a result, Americans today are more conscious of comfort than they've ever been before, even though they still may not have rushed out and bought a window cooler or a new central plant.

"This awakening to the importance of comfort via the air conditioning route is of tremendous help to the heating industry."

The impact of central residential air conditioning on the heating industry was further emphasized by Richard M. Locke, market manager, Residential Air Conditioning, who said:

"Year 'round air conditioning is a new and dynamic force in the residential heating industry. The tremendous drive and enthusiasm of the entire air conditioning industry has done and will do more than any one factor to make our industry truly aggressive and merchandising minded. As has been previously pointed out, air conditioning is still more of a luxury than straight heating and, therefore, is in competition with the most merchandising segments of American business, such as the automotive industry, major appliances and so forth. Already some of these manufacturers of major appliances are entering the air conditioning field and they are teaching their dealers the same merchandising ideas they taught their appliance outlets in the past.

See Merchandising Challenge

"Some furnace and small air conditioning manufacturers consider this new outlook a threat to their established market. We, however, believe it is a challenge and that it should help us all raise our selling and merchandising sights to new and higher levels.

"Our management tells me that the growth of the residential air conditioning industry closely parallels that of the oil burner industry thirty years ago. At that time the multitudinous designs and approaches toward the development of an automatic oil burner not only confused the industry itself but it also confused the potential customer. Oil burners were more or less a luxury plaything for quite a few years after they were introduced.

"Now just a few words about some of the industry problems and trends. Not necessarily first, but certainly of real import is the fact that there is no real knowledge of consumer reactions to residential air conditioning. Both from a product design and from the sales and merchandising standpoints, such knowledge is very important.

"Another problem we all must face is that of various channels of distribution which are developing. While the heating dealer has been the logical outlet from the standpoint of distribution and service, refrigeration and air conditioning dealers also offer important contributions in refrigeration know-how. Of course, air conditioning is being sold through both channels at present.

New Type of Dealer Emerging?

"It is our belief that a new type of dealer will emerge. Whether he springs up from those who were originally associated only with heating or only with refrigeration will be dependent on the individual aggressiveness of the particular dealer himself. Just as there have been and will continue to be mergers between heating and air conditioning equipment manufacturers, we believe this new dealer will be the result of the fusing of interests, know-how and experience of both groups plus that new modifier—the merchandising knowledge imparted to the dealers of the major appliance manufacturers today.

"Education and better salesmanship are really two of the biggest problems before the air conditioning industry today.

What's Ahead for Industry?

"It's always fun to look into the future a little, so just a few words about trends.

"One of the most important trends during 1955 has been the broadening of product lines so that nearly every air conditioning equipment manufacturer has both water and air cooled condensing units today.

"Another important trend has been the rapid swing toward simplified installation and wiring procedures on all air conditioning units.

"Still another trend that affects the industry and the control industry specifically is the requirement for greater sensitivity of thermostats than have been available in the past.

"Now how about future products? Let's not forget that home air conditioning is still a young industry. What looks very modern today may be entirely antiquated in just a few years.

"We ought to watch the heat pump. The heat pump makes sense in many climates, and we can be sure that the electrical utilities are going to push it and push it hard.

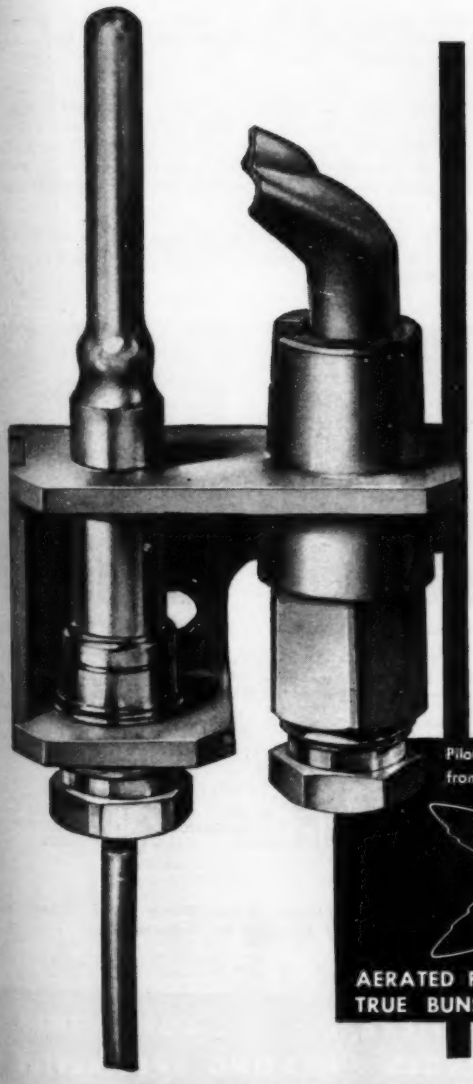
"Another new factor is the natural or bottled gas engine for driving a compressor. Two or three manufacturers have already announced their gas engine units which replace electric motors. This can't help but interest the gas utilities and we can expect them to push these gas engines as well as the gas fired absorption systems in order to capture the year 'round load rather than just the winter heating load. And, looking further into the future, we all have been intrigued by the veiled remarks about expanded air systems and electronic systems which require no moving parts or refrigeration equipment, and which both heat and cool.

"We feel that residential air con-

(*Continued on page 92*)

NEW non-linting PILOT BURNER

Annulair® TYPE R

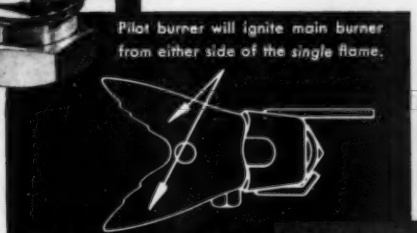


• Type R Annulair pilot burner for all gas appliances is non-linting because it has no primary air hole to clog up. Lint drawn into the pilot burner is burned in the pilot flame and carried away by the flame itself. Pilot screens are unnecessary.

Ignition of the main burner and heating of the thermocouple is performed by a single flame which is fanned out by the tip burner, so that either side of the flame may be used to ignite the main burner, permitting a flexibility in mounting that appeals to the design engineer. Operating costs are low because of a moderate gas consumption of only 700 Btu per hour with all gases—manufactured, natural, mixed, and LP.

Type R pilots are now available with two kinds of brackets and with either replaceable orifices or pressed-in orifices, but all possess the same burning characteristics, ease of mounting, and low cost.

The novel design of this new burner adapts itself to use on more than one type of appliance. This means cost savings to you through reduced inventories. The selling price is new, too—a must for the cost-conscious buyer.

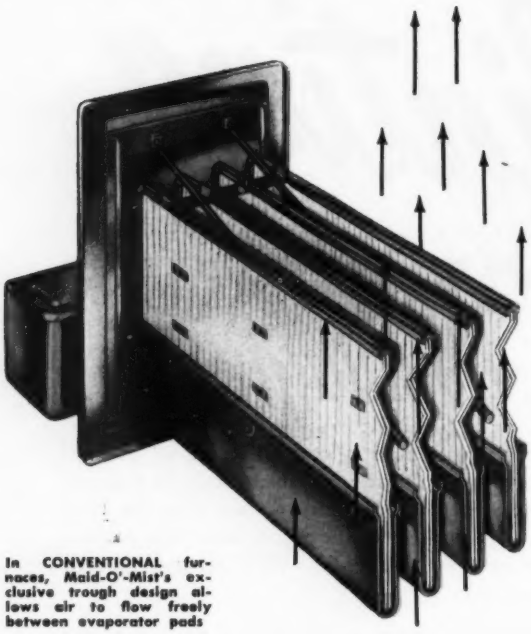


AERATED FLAME OF TRUE BUNSEN TYPE

Write for complete information and specifications.

MILWAUKEE GAS SPECIALTY CO.
Dept. AA-5, Milwaukee 1, Wis.

Conventional or Counter Flow!



In CONVENTIONAL furnaces, Maid-O'-Mist's exclusive trough design allows air to flow freely between evaporator pads

MAID-O-'MIST

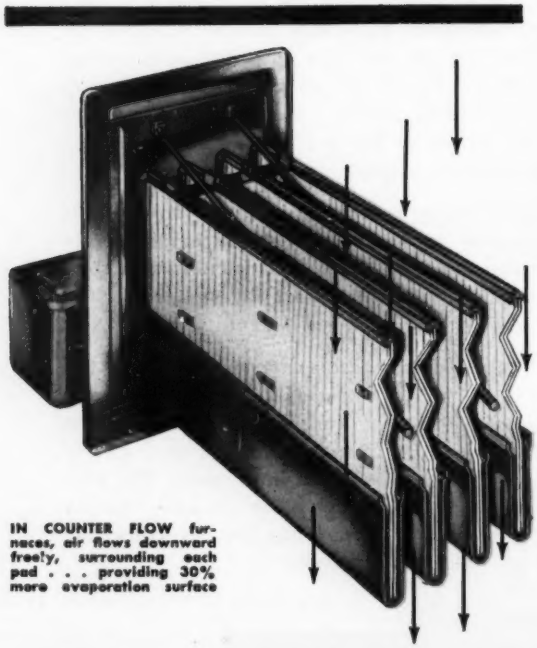
CONVECTOR HUMIDIFIER

is the ONLY standard unit that fits BOTH TYPES of warm air furnaces

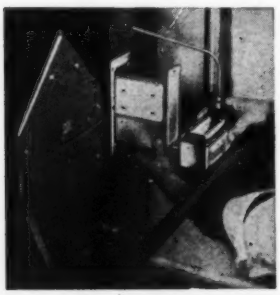
This versatile convector humidifier is ideal for the small plenums of all modern warm air furnaces . . . conventional, counter flow and year-around air-conditioning units.

Unlike ordinary warm air furnace humidifiers, the Maid-O'-Mist has no flat bottom to block the flow of warm air. Maid-O'-Mist's exclusive design—individual ⅜" copper water troughs spaced 1" apart—allows unrestricted air flow between patented evaporator pads . . . provides 30% more evaporating surface necessary in short-cycle modern heating.

Maid-O'Mist's design makes installation easy. There's no fitting or fastening to the back of the plenum. The unit is entirely supported by the flange frame in front.



IN COUNTER FLOW furnaces, air flows downward freely, surrounding each pad . . . providing 30% more evaporation surface



FOR COUNTER FLOW WARM AIR FURNACES

Maid-O'-Mist, because of its narrow trough design, can be installed on either side of counter flow furnaces having a minimum air passage of 3 inches.

FOR CONVENTIONAL WARM AIR FURNACES

Installation is fast and easy. Just cut opening in plenum and make water connections. 13 sizes available with evaporation capacities of 1 to 10 gals. per day.

60% LESS AIR RESTRICTION IN PLENUM

30% MORE EVAPORATION AREA

50% LESS INSTALLATION TIME

Get full information on these competitively - priced units from your jobber or write for Bulletin 701-B

MAID-O-MIST Inc.
HEATING SPECIALTIES

AUTOMATIC HUMIDIFIERS . . . . . AUTO-VENTS
WATER LINE CONTROLS . HEATING SPECIALTIES

MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

Look for all these Marks of Quality in

REYNOLDS ALUMINUM

1 **Combination Storm Door & Screen**
2 **Thresholds**
3 **Hardware**
4 **Awnings**
5 **Combination Storm Sash & Screen**
6 **Garage Door**
7 **Siding**
8 **Louvers**
9 **Reflective Insulation**
10 **Flashing**
11 **Shingles**
12 **Gutters & Downspouts**
13 **Windows**

and today especially, look for
14 RUSTPROOF DUCTS ENGINEERED FOR YEAR-ROUND AIR CONDITIONING

Designed in REYNOLDS ALUMINUM

In more and more building details, rustproof Reynolds Aluminum does a better job. But today's air conditioning makes one aluminum feature more important than ever... the duct system. Air conditioning means moisture condensation... danger of rust damage. Make sure of rustproof ducts...look for the Seal that identifies Reynolds Aluminum. Write for free folder that also tells how aluminum speeds air flow, improves efficiency. **Reynolds Metals Company,** General Sales Office, Louisville 1, Kentucky.

REYNOLDS ALUMINUM

See Reynolds new dramatic series "FRONTIER," Sundays, NBC-TV Network.

Making your Work an Outstanding Feature of Modern Homes!

This advertisement appearing in December BETTER HOMES & GARDENS is part of a continuous consumer campaign which also uses SMALL HOMES GUIDE and LIVING FOR YOUNG HOMEMAKERS ... in addition to Reynolds national network TV. The campaign also includes extensive promotion to builders.

All of this adds importance to your work and opens new fields of business opportunity to those who feature aluminum ductwork. Recommend aluminum! Tell your next builder-prospect you can help him make a selling feature of aluminum ducts! For full information write Reynolds Metals Company, Box 1800, Louisville 1, Ky.

WRITE FOR DETAILS ON CONSUMER BOOKLETS AND ON THE USE OF THE "DESIGNED IN REYNOLDS ALUMINUM" SEAL!

REYNOLDS ALUMINUM

See "FRONTIER," Reynolds new dramatic series, Sundays, NBC-TV Network.

Control Systems Have Role in Industry's Future

(*Continued from page* 88)

ditioning offers the greatest challenge and the greatest future our industry has had in the past twenty years. In fact, the opportunities are here now! Our business charts prove this. Already this year our sale of residential air conditioning controls is over 200 percent above our total 1954 sales which themselves were sizeable."

Zone Control Is Needed

Zone control, its development during the past few years and a brief picture of its future was outlined by Walter J. Baak, trade sales manager. Using a scale model of a two story house, Mr. Baak showed how architects have redesigned living quarters into the ranch style home and the trilevel home common in today's housing developments. The change in architectural design has brought out the necessity for zone control, according to Mr. Baak, who said, "Zoning can no longer be considered a luxury. With the present trends in architectural design zoning is a real necessity for providing comfort in many modern homes."

Promotion Backs New System

H. D. Bissell, director of merchandising, explained the company's position—past and present—in the marketing of its electronic thermostat system. Mr. Bissell said: "The system included outdoor anticipation and temperature compensation accomplished through the "magic" of electronics. It added up to plenty for the consumer, and plenty to sell. We believed in the long term inevitability of the place of electronics in the home, and felt that in this system we had a chance of stimulating the better-than-average contractor to sell quality and fine performance against destructive price competition.

"Our marketing of the system from 1948 through 1952 was accomplished through the jobber and dealer trades. But our sales level on the equipment was extremely modest, did not rise over the years, and was largely confined to a small number of dealers.

"It was at that time that we were completing our marketing of 7 Steps to Greater Dealer Sales. Some 35,000 copies of the publication were distributed across America as a merchandising aid for the industry.

"We followed this effort with a carefully developed selling program to the heating dealer. In May 1953 we held nationwide sales meetings with our heating controls sales organization and launched our all-out selling program for heating jobbers and dealers. But it became painfully evident that in spite of our position with dealers and jobbers nationally, we were up against an unwillingness to take on this new idea, that militated severely against the hope of volume sales.

Convictions Remain Firm

"Our reaction to this lack of success through 1953 and the first days of 1954 did not dim our convictions that the electronic control had a future in the average home. Nor did it result in our regarding the heating dealer and jobber with any less affection, regard and appreciation than had been our feeling for decades past.

Seek Broad Market

"We were faced with the inevitable conclusion that we had to move outside our accepted channels if we were to progress. In making up our minds to go to the builder, we did so with the belief that if we could get broad distribution of the electronic thermostat system in thousands of modest priced homes, the impact of such success on the heating trades might be profound. We could visualize it developing willingness on the part of the dealer and jobber to promote the equipment themselves.

"Thus, we saw, through our builder contact plan, the only means of education still open to us.

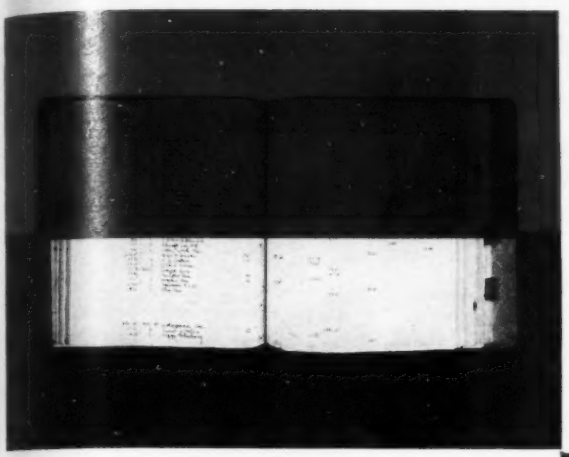
Much Has Been Learned

"Since the spring of 1954 we have had a tremendous experience and have been making very considerable progress. We have sold far more of the systems than at any other time in the history of the company. We have also been learning the facts of the builder business, what can be accomplished by dealing through project builders, and just what is the best way to handle the pricing and profit relationship between the heating trades and the builder himself.

"Dealers and jobbers have accepted our interpretation of the program with good spirit and understanding. They recognize that it costs money to sell a new idea and that in selling the builder we are building a new market for other than basement priced items.

"As our pattern of dealing with builders has developed, our know-how in handling orders, deliveries, installation and service backup has increased. In most instances today, the relationship comes down to a closely coordinated program of contact and mutual understanding between the builder, his heating dealer and ourselves. Where a heating dealer, or his association, feels very strongly about our billing the builder direct, we arrange for billing through the heating dealer. In either case, whether we bill the heating dealer or the builder, the dealer is adequately compensated as a result of the pricing schedule introduced with our new system.

"I am glad to say there is every indication right now, across the country, that our efforts have succeeded in implementing a direct contact program with the American builder while still earning the good will of the heating trades and helping them in the same fashion that we have always tried to support the industry."



KEEP THE JOB OUT OF THE RED WITH UTILITY'S

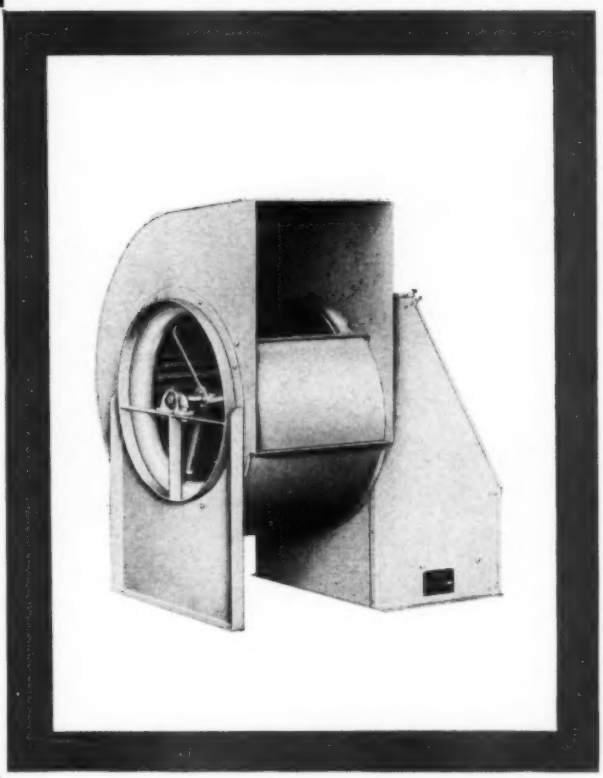
NEW ENCLOSED DRIVE BLOWERS 10″ TO 36″

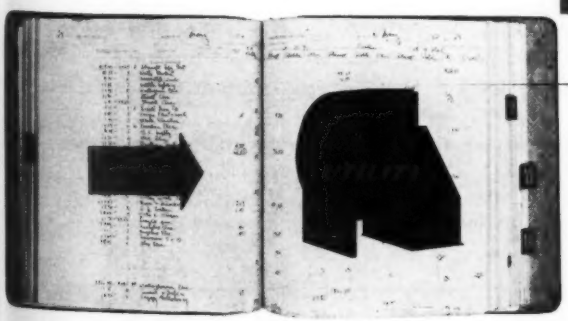
You've demanded it — Utility has perfected it for you — a full series of high quality enclosed drive blowers designed to withstand prolonged wind and weather abuse to provide long life with low upkeep.

Easy to install, these blowers require a minimum of floor space. Completely self-contained unit-pulleys, V-belts and motors are accurately pre-engineered. Weatherproof enclosures for motors and drives make these blowers ideal for outdoor installation.

Because roof installations are forgotten, they frequently break down from lubrication neglect. To prevent this, all sizes feature permanently sealed, pre-greased ball bearings, requiring no further lubrication — forever impervious to dirt, dust, moisture and drastic temperature changes.

Here is another example of Utility quality and value — the factors which help you sell the job in the first place, insure your profit in the second. Plan with Utility... and know you'll never see red on any job!





Manufacturers of Heavy and Standard Duty Blowers for Heating, Air Conditioning and Ventilating Installations. Producers of Blowers and Blower Parts for Original Equipment manufacturers.

Let us send you full information on Utility Blowers. Write

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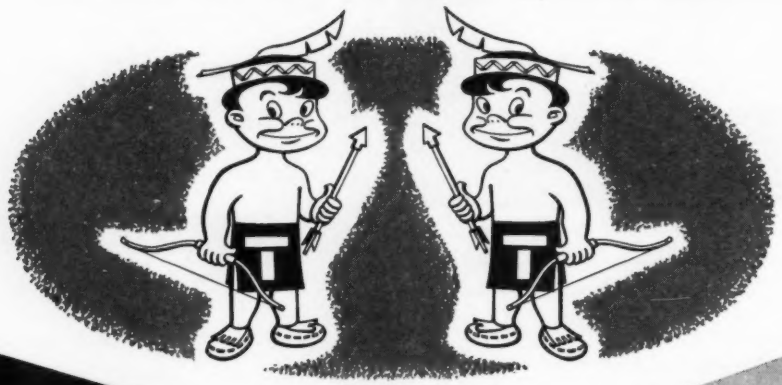
A DIVISION OF UTILITY APPLIANCE CORPORATION

FOR LARGER AIR COOLED APPLICATIONS

A BRAND NEW

TECUMSEH TWIN



IDEAL FOR FURNACE UNITS

BEST FOR LARGE ROOM COOLERS

GREATER CAPACITY

IMPORTANT COST SAVINGS

TECUMSEH'S NEW 1½ H. P. AIR COOLED COMPRESSOR

HAS SAME COMPACT BASIC DESIGN as the 1 h.p. model, and is adaptable to most cabinets. It is slightly higher, but the width and mounting dimensions are the same. Start and run capacitors are bulkhead mounted, remote from the compressor.

CUTS COST ON FURNACE APPLICATIONS. Air cooling requires no water or drain connections. Faster, easier installations. Especially adaptable for less expensive applications in year-round systems.

BROADENS YEAR-ROUND MARKET. Designed into a system, this new compressor will help broaden the year-round market by providing more economical central cooling for low-cost housing.

ELIMINATES WATER SHORTAGE PROBLEM. Fully air cooled. Delivers rated output without the use of water.

INCREASES ROOM COOLER MARKET. Gives the designer an economical compressor for large room coolers. Fits either console or window type.

YOUR TECUMSEH REPRESENTATIVE is ready to show you how this Model B32P16 will help you meet design, engineering and cost problems on 1½ h.p. applications. Write today for his name and address.

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TECUMSEH PRODUCTS Company

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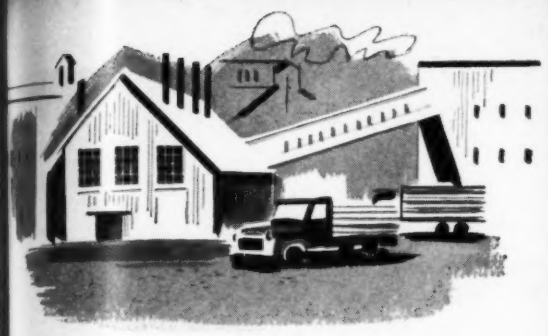
★ The world's largest producer of Compressors for the refrigeration industry. ★

EXPORT DEPT.: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Mich.



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GALVANIZED SHEETS

for long-lived roofing and siding

There's an easy way to solve roofing and siding problems quickly, dependably, economically. That's the Weirton way—with Weirton galvanized steel sheets. Their tight zinc coating resists cracking, peeling and flaking. The strength of steel plus the corrosion resistance of zinc gives added years of life. And long experience shows that galvanized sheets give more protection, with less maintenance and at lower cost.

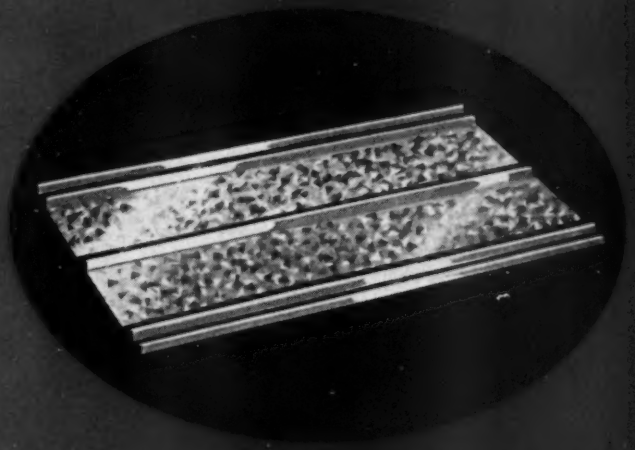
Weirton's modern production processes, plus close quality control all along the line, make Weirton galvanized sheets a best buy for your roofing and siding needs.

WEIRTON STEEL COMPANY

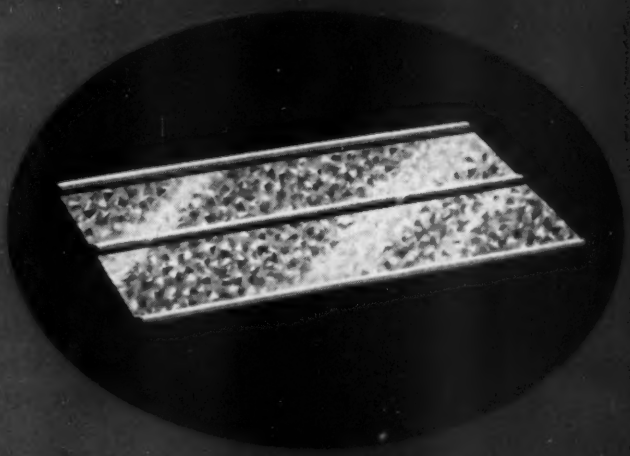
WEIRTON STEEL COMPANY

Weirton, West Virginia

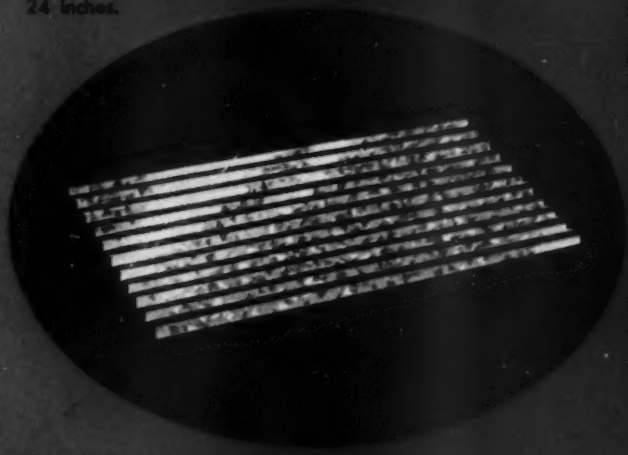
NATIONAL STEEL CORPORATION



Famous Weirton "Safety Drain" galvanized steel sheets combine maximum protection with outstanding good looks.



Weirton galvanized V-Crimp sheets are made in 2V-, 3V-, and 5V-crimped, and in gauges 26, 28 and 29; covering width, 24 inches.



Weirton galvanized corrugated steel sheets are most economical in first cost, and are the strongest form of steel roofing because the corrugations strengthen the entire sheet.

A ROOF ISN'T just a roof anymore; in this case, on a grandstand at a dog race track, its a support for ducts and evaporative coolers

Sales Records Call for

A Review of Evaporative Cooling

New uses for the oldest means of providing cooling for comfort and processing has brought the market for evaporative coolers to a new high. A review of sales, service and installation practices may open more doors to this method of cooling

By R. S. Ash

International Metal Products Co.

THE OTHER DAY I learned something about eggs. I had always considered them primarily a breakfast food; on thinking it over, I realized their primary function is propagation of the breed. To produce better chickens and larger broods it has been found advisable to cool newly laid eggs to 80 deg in a moist atmosphere for several days before placing them in the incubators. For this and other applications, evaporative cooling is performing a service well and at low cost. Other recent applications such as industrial processing of rubber where a high moisture content in the air is desirable to minimize the static electricity generated, cooling of stock sheds on farms and ranches, in textile plants and in dog racing tracks, all come to mind in a review of the wide field served by the evaporative cooler. A review of the principles of this method of cooling and a few suggestions of ways that may represent more income for the contractor would therefore be timely.

The accompanying graph shows a manufacturer's estimate of the number of evaporative coolers sold since the end of World War II. The exact number of coolers made is difficult to determine largely because there is no trade association of manufacturers of evaporative coolers. Examination of the graph shows that the number of coolers sold has more than doubled since 1947 and that the rate seems to be gaining momentum each year.

The busy season for evaporative cooler work during 1955 is about over; however, with the potential for this product in 1956, now is the time to make plans that can be carried out early next year when the market is beginning to blossom.

The modern evaporative cooler is capable of creating comfort because of three basic facts:

1) The evaporation of water cools the air flowing across the pads.

2) Rapid motion of the air across a person's body lowers the effective temperature.

3) The cooler pads filter dust, dirt and foreign matter from the air.

(*Continued on page* 100)

Your choice of normal or low starting current...

with Performance-Rated

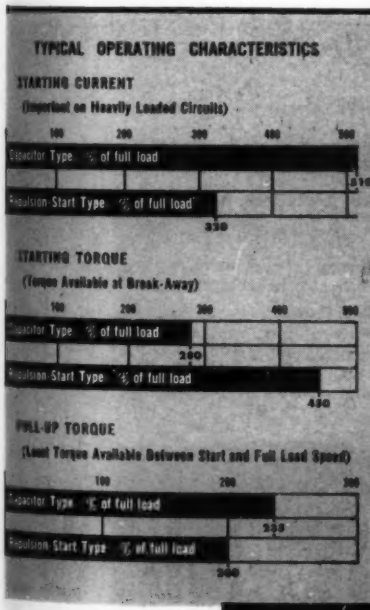
Century

HIGH TORQUE, SINGLE-PHASE MOTORS

Capacitor Motors... ⅛ to 20 H.P. provide high starting torque, high pull-up torque and require normal starting current. They are available in drip proof, dust proof and explosion proof enclosures.

Even if you have severe starting current limitations, you can select the torque you need for sure starts and smooth pull-up to speed from the Century Performance-Rated Single-Phase line (see bar chart below for operating characteristics of two types of Century Single-Phase Motors).

Whatever Your Motor Job . . . there's a Century Motor Performance-Rated to handle it with top effectiveness. Contact your nearby Century branch office or Authorized Distributor.



Repulsion Start, Induction Motors (type RS)... ½ to 7½ H.P. provide very high starting torque, yet require unusually low starting current. They are available in drip proof and splash proof enclosures.

Performance-Rated© Motors ⅛ to 400 H.P.

CE-32

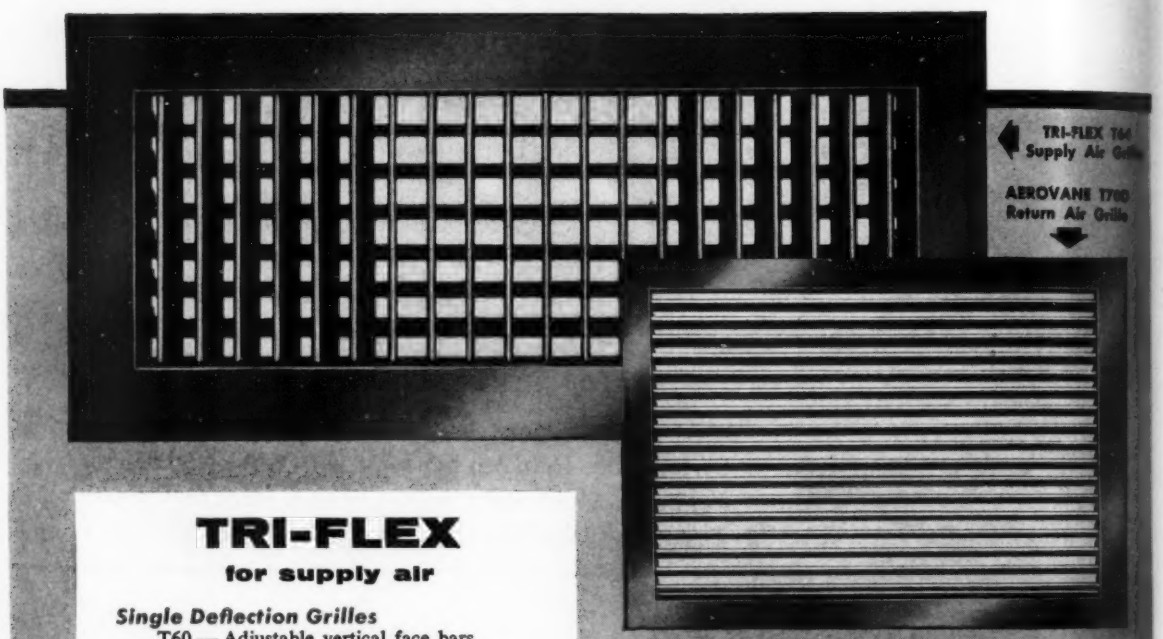
CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri • *Offices and Stock Points in Principal Cities*

Install T&B Grilles and Registers

for Economy . . . Easy Selection . . . Simplified Installation

A TYPE AND SIZE TO MEET THE SPECIFIC NEEDS OF EVERY JOB!



TRI-FLEX

for supply air

Single Deflection Grilles

T60 — Adjustable vertical face bars
T50 — Adjustable horizontal face bars

Double Deflection Grilles

T64 — Adjustable vertical face bars and horizontal rear bars
T55 — Adjustable horizontal face bars and vertical rear bars

Single Deflection Registers

T67 — Adjustable vertical face bars and vertical blades
T57 — Adjustable horizontal face bars and vertical blades

Double Deflection Registers

T647 — Adjustable vertical face bars, horizontal rear bars and vertical blades
T557 — Adjustable horizontal face bars, vertical rear bars and vertical blades

AEROVANE

for return air

Return Air Grilles

T70D — Horizontal bars set at 35° angle
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Return Air Registers

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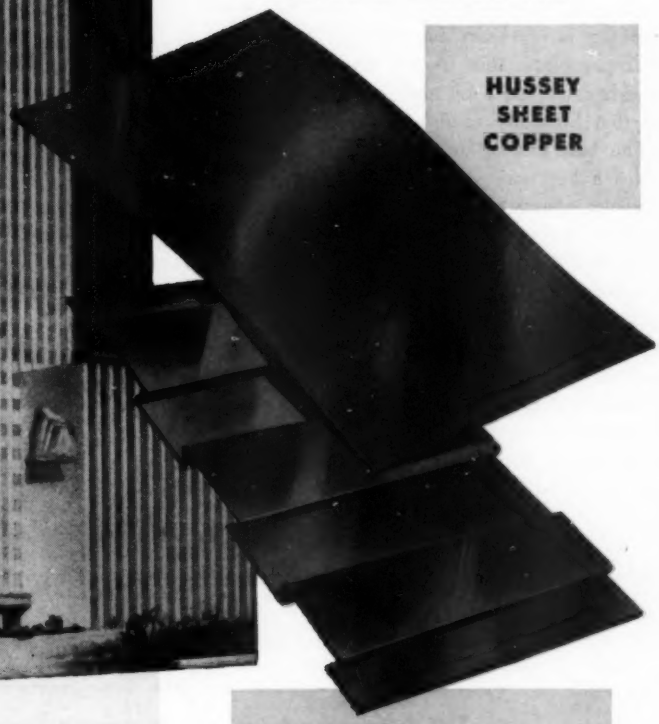

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Warehouse Stocks in:
PITTSBURGH CLEVELAND NEW YORK CHICAGO ST. LOUIS PHILADELPHIA CINCINNATI

Review Sizing Methods for Evaporative Coolers

(*Continued from page* 96)

Evaporation is low pressure boiling. In evaporative cooling, this heat can be obtained only from the air itself and its removal from the air is equivalent to the cooling effect of melting 7 lb of ice for each pound of water evaporated. With 100 deg DB temperature and 19 percent RH, an evaporative cooler supplying 4500 cfm can produce up to an equivalent of 4½ tons of refrigeration if the temperature is lowered to 74 deg DB.

Determine Capacity First

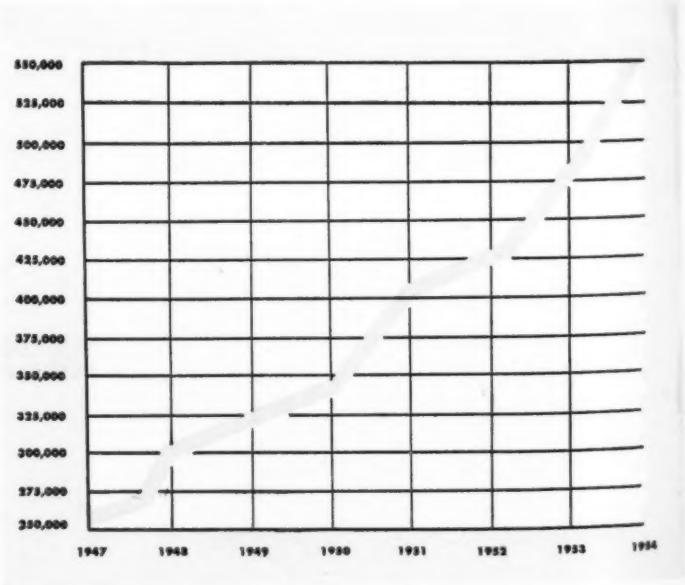
Although it is commonly believed that a low relative humidity is necessary for effective functioning of evaporative coolers, this is not always the case. Relative humidity is significant only when the DB temperature for that humidity is also known.

The best method of determining cooler capacity involves a heat gain calculation. Basically, the principles of cooler sizing and cooler load determination are the same for evaporative cooling as for any other equipment designed to control space temperature. In some cases, however, the time and effort involved in making such a calculation cannot be economically justified. Under such circumstances there are a number of rule of thumb methods which will give satisfactory results providing reasonable judgment is used in applying them. One that is commonly used in the western states is to divide the difference between the design DB and WB temperatures by ten and consider this figure as the number of minutes needed for each air change. In areas where 100 deg DB temperature and 70 deg WB temperature prevail, a three minute air change would be called for on an average job. If the external heat gain were considered high due to unusually large unshaded glass areas or for other reasons, judgment would dictate an air change of about two minutes. In the case of high internal heat load such as would be experienced in a dry cleaning plant, the cooler should be sized to provide a one minute air change. Jobs involving a high internal load or a high odor level, such as a restaurant or bar, should be sized to provide no fewer air changes than would be recommended for a mechanical ventilating system. If the job is large and complicated, it is advisable to take the time to make a heat gain load calculation.

Don't Overlook Static Pressure

In sizing coolers for a job, it must be remembered that the air volume required should not be confused with the catalog rating of the cooler, which represents the air delivery at zero static pressure. Many evaporative cooling systems have a certain amount of ductwork which restricts the air flow of the cooler. Many times a job calling for a three minute air change will require a cooler with a catalog rating indicating that the unit will deliver sufficient air to provide a two minute air change. If performance data is not available from the cooler manufacturer, it is often a good idea to assume that in an average duct installation the cooler will deliver approximately 70 percent of the free air or catalog rating of the cooler. In checking the performance of a job where catalog and engineering

(*Continued on page* 104)



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- *A full line of the finest home heating and cooling units made.*
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Common Velocities Determine Cooling System Size

(*Continued from page* 100)

TABLE 1—FREE AIR delivery estimates for evaporative coolers help determine job performance

Blower size (in.)	Motor Hp	Cfm
10	1/4	2000
12	1/4	3000
14	1/3	3500
16	1/3	4000
16	1/2	4500
19	1/2	5500
19	3/4	6500
22	3/4	7500
22	1	8500
26	1	11,500
26	1 1/2	12,500
26	2	15,000

data is not readily available, Table 1 may be used in estimating the free air delivery of the cooler.

Evaporative coolers may be installed with or without ducts. In many houses and offices the ductless system predominates because of the relative ease with which it may be made. However, the ductless installation has certain limitations. The air motion in the room in which the cooler is installed frequently is noticeable; furthermore, since air picks up heat as it travels through a building, the rooms farthest from the cooler will usually be 8 to 10 F warmer. These disadvantages may be overcome through the use of a system for duct distribution of the cooled air. An outlet register should be located in each room.

Two Methods Used

In designing duct systems for use with evaporative coolers, the equal friction method and the velocity method are the most common. In the former, friction loss per unit length of ductwork is maintained constant throughout the system. In general practice a friction loss of approximately 0.1 in. per 100 ft is used. This method of determining duct sizes ordinarily will result in the same friction per unit length for short ducts handling smaller quantities of air as exists in the longest duct.

In the velocity method of sizing a duct system, selected velocities are arbitrarily assigned to the various sections of the system. Generally, the highest air velocities are chosen at the cooler outlet and progressively lower velocities assigned as various branch ducts are taken off the main duct. The lowest velocity is at the end of the duct leading into the conditioned space. Since the quantities of air to be delivered through each section are known, the cross-sectional area of each section of duct can be determined on the basis of the assumed velocities. The pressure or friction loss of each section can then be calculated separately and the total pressure against which the cooler must operate obtained by adding the individual losses of the various sections which make up the longest equivalent length of duct.

The velocity method can produce results as satisfactory as does the equal friction method if care is used in choosing the proper velocities to approach equal friction in all ducts. A combination of the two methods is often used where there are a number of branch ducts by employing the equal friction method to make the total pressure loss in each branch duct equal to the pressure loss in the remaining section of the duct. This combination method is satisfactory provided the velocity in the branch duct is not increased beyond a point consistent with good practice from the standpoint of noise.

For ducts up to 12 in. in width, 28 ga is generally used; for 12 to 18 in. ducts 26 ga is used; 18 to 30 in., 24 ga; over 30 in., 22 ga.

Ducts located on the outside of the building and in uncooled spaces such as attics require at least 1 in. of insulation having a coefficient of between 0.20 and 0.27 Btu. Heat transmission of bare galvanized sheet steel exposed to summer sun is approximately 200 Btu per sq ft of area, which can be a sizeable load on the cooling system. If the cooler is installed on the roof it is advisable to use a down discharge model to eliminate the loss in pressure that would be present in the elbow required with a horizontal model as well as to eliminate heat gain from exposed ductwork.

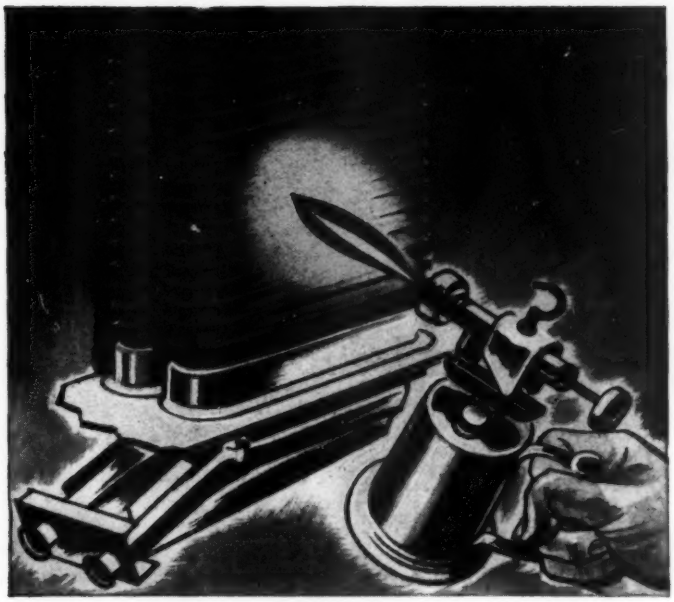
Exhaust Must Equal Supply

A consideration often overlooked in designing an evaporative cooling system is the need for exhausting the same amount of air as is supplied. If the air is not removed as fast as it is introduced, air pressure will build up to a point where there will be a considerable decrease in air flow and a noticeable increase in relative humidity. It is a good practice to make the exhaust opening at least three times the size of the discharge opening of the cooler. While windows and doors located at distant points may be used, exhausting the spent air to the attic is often considered better. This method forces the hot air in the attic out through louvers installed under the gables.

Common Velocities in Evaporative Cooler Systems

Application	Trunk and large branches	Small branches and grilles
Residences	1200-1400	800-1000
Offices, theatres	1400-1600	1000-1200
Stores, restaurants	1600-1800	1200-1400
Factories	1800-2000	1400-1600

WON'T BURN OUT



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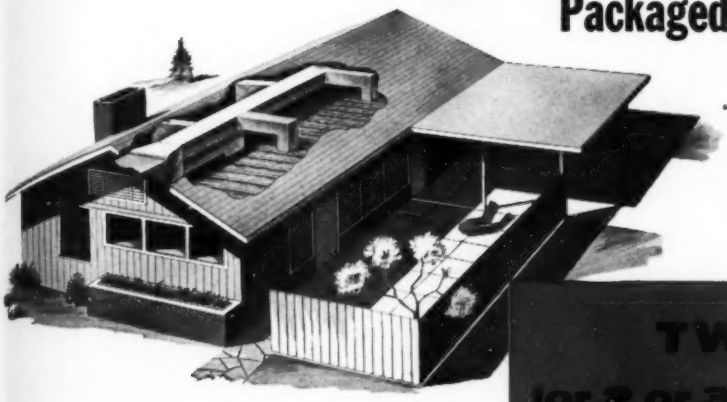

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Here's How New Equipment Clearances Were Determined

Rigid tests to find temperatures encountered on a wood ceiling above a forced warm air furnace plenum resulted in modified fire clearance specifications for heating equipment

By Charles Pesterfield*, Richard Ditsworth, L. G. Miller †, Dee Cramer‡ and C. A. Pfahl††**

SINCE MANY installation codes and standards specify a minimum of 6 inches clearance between a combustible ceiling and the top of a plenum for a forced air furnace, it is of interest to know what temperatures do occur on the ceiling, under different conditions of furnace operation, when the clearance is less than this value, and if such temperatures are below some reasonable allowable temperature. The project reported herein was conducted for the purpose of determining whether present clearance requirements in installation codes could be essentially changed. The following results were obtained from tests sponsored by the Sheet Metal Contractors National Association and made in the mechanical engineering laboratory at Michigan State university. The tests were considered realistic as to physical setup and severe with regard to test conditions, such as bonnet limit control settings, etc.

A simulated basement ceiling, 4 × 12 ft. was constructed from 2 × 8 in. pine timbers and ¾ in. plywood,

(*Continued on page* 112)

Professor of mechanical engineering, Michigan State university; Instructor, mechanical engineering, Michigan State university;† Special consultant, National Warm Air Heating and Air Conditioning Assn.;‡ Past president, Sheet Metal Contractors National Assn. and Flint, Mich., warm air heating dealer;†† President, XXth Century Furnace, Inc.*

BACKGROUND OF THIS REPORT

WARM AIR HEATING dealers have long been aware of the difficulties imposed on the homeowner with relation to insurance standards for heating installations they install. These difficulties, of course, relate to clearances between the front, sides and back of a furnace to adjacent combustible material, and between the furnace plenum and supply ductwork and combustible material. The accepted clearances were those specified in Pamphlet 90 of National Fire Protection Association and its supporting agency, the National Board of Fire Underwriters, and incorporated in the first edition of the Sheet Metal Contractors National Association's Suggested Warm Air Heating Code.

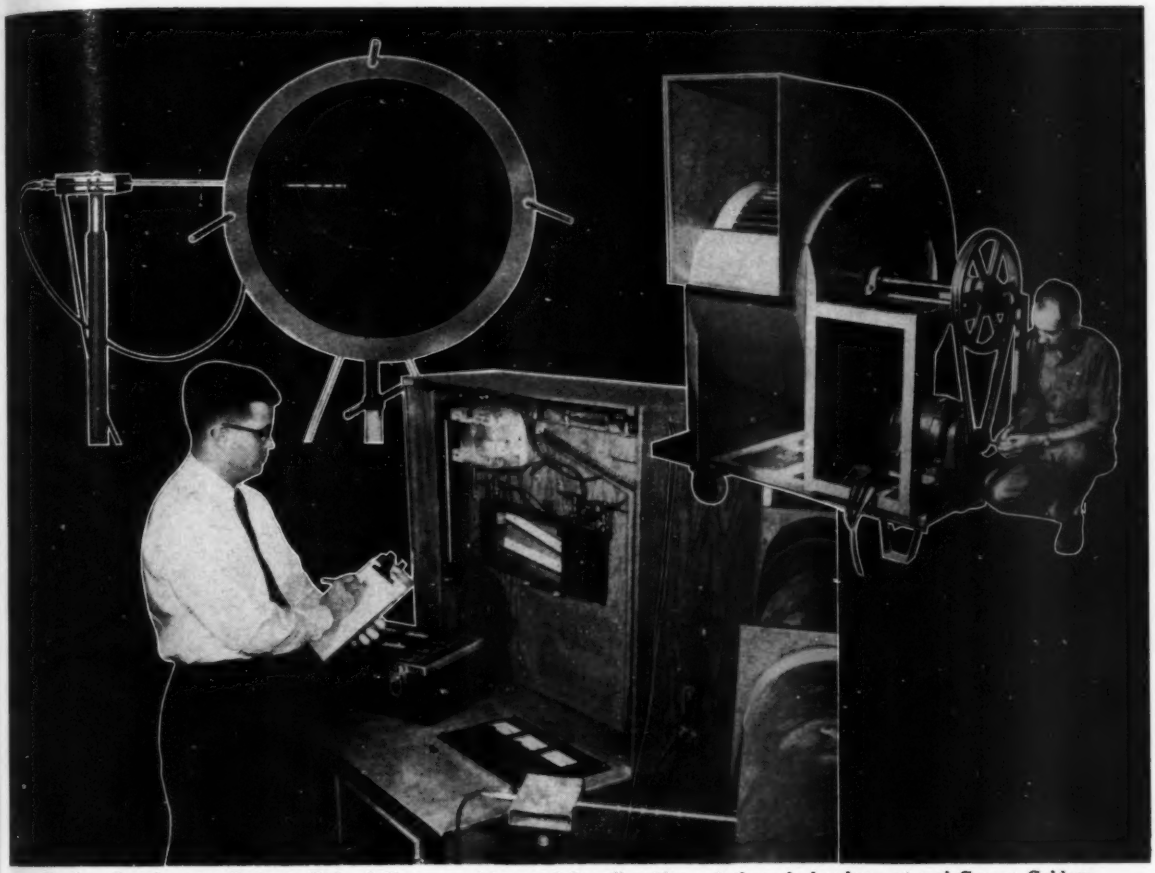
In preparing the second edition of the code, the association pointed out to NFPA that clearances were not in keeping with the temperatures given off by modern heating equipment; with the close control of temperatures in plenum and duct, made possible by modern control apparatus; with the usual installation practices followed today; and with the location of furnaces in closets and equipment rooms.

On the association committee's suggestion that certain of the standards be modified, NFPA called for evidence that lesser clearances are possible without danger.

Accordingly, SMCNA arranged for such tests by the engineering department of Michigan State university. Working from test setups and following procedures approved by NFPA, significant results were obtained and presented to the NFPA warm air heating subcommittee. The results were in turn accepted by the general committee in January and approved at the NFPA annual convention in May, 1955.

The approved clearances were incorporated in a revision of Pamphlet 90, which was split into two separate standards, 90A and 90B.

The most important of these revisions were reported in full in the October 1955 American Artisan. Tables 1 and 2, which list the new clearances for furnaces and heat exchangers and the specified forms of protection, were presented in their entirety. Copies of Standard 90B are now available at 35c each from the National Fire Protection Association, 60 Batterymarch St., Boston 10.



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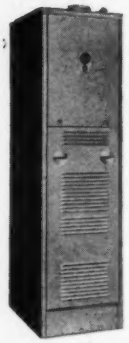

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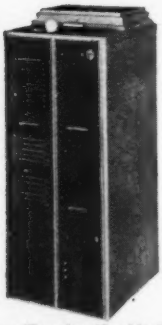

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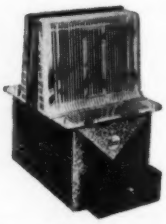

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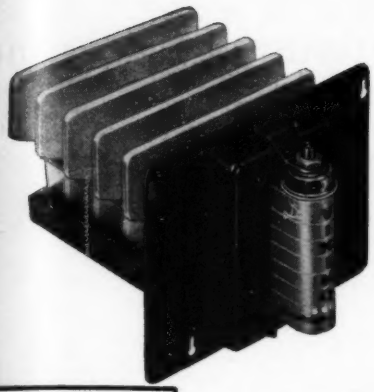

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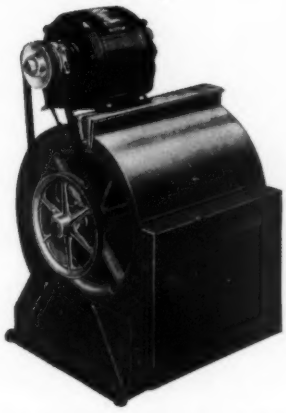
Blower Packages by Viking

Five models — two with round and three with square cabinets.
Five capacities for from 75,000 to 230,000 BTU/HR furnaces.



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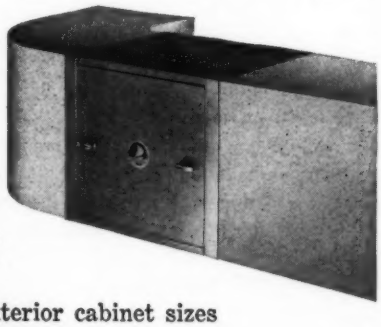

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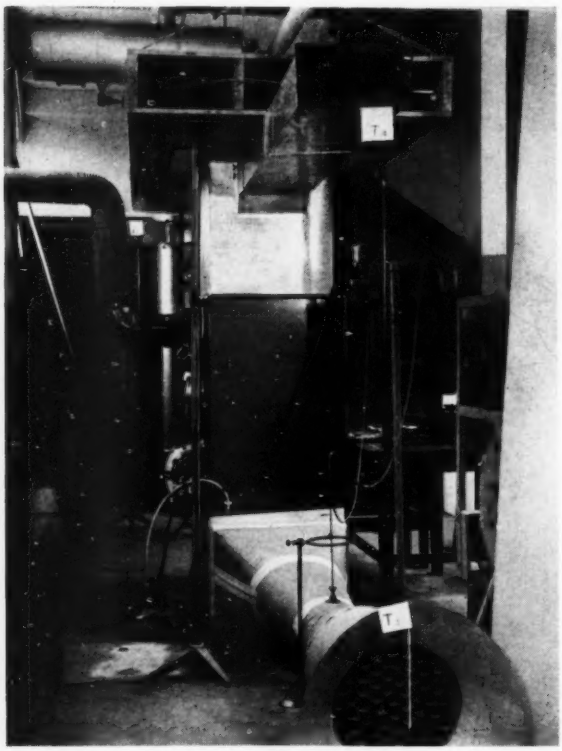
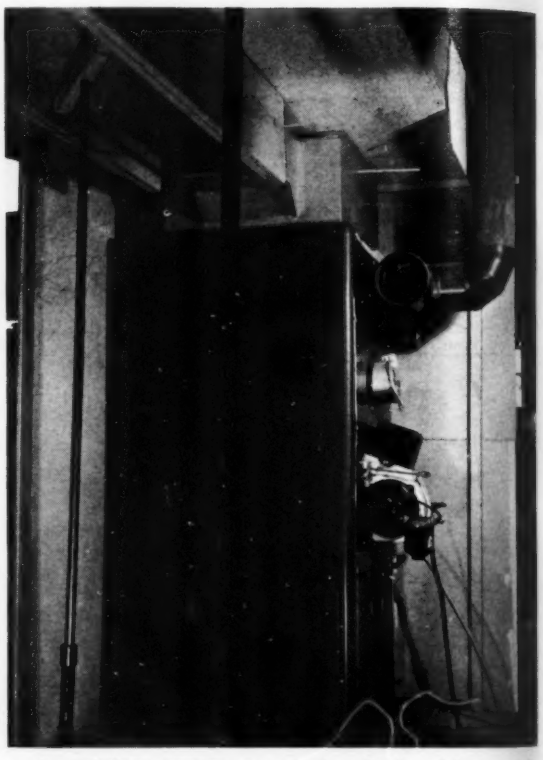
Rigid Tests Result in New Equipment Clearances

(*Continued from page* 108)



1 CONDITIONS ARE CHECKED in simulated basement setup. Note end view of ceiling and cfm measuring device



2 CORNER SETUP places back and sides of furnace 6 in. from insulating board walls

and located with respect to the plenum and the duct work as shown in Fig. 1. When a 30 × 30 × ⅛ in. asbestos millboard sheet was used above the bonnet, it was either tightly nailed to the ceiling or held in position with chapelets used as spacers. An oil furnace with pressure atomizing burner and "doughnut" heat exchanger was used. The furnace, rated at 90,000 Btu, was operated with an 0.85 gph nozzle and no. 2 fuel oil. A bimetallic spring type limit control with a range from 100 to 500 F was installed in the bonnet, 4 in. above the heat exchanger surface and set at 300 F. The 24 in. high bonnet had provisions for two horizontal 6 × 12 in. runs in opposite directions. For the test with the plenum 10 in. high (Fig. 2) the furnace was placed in a "corner" so that the back and sides were spaced 6 in. from insulating board walls. One run was straight and was approximately 80 in. in length; the other run included one 90 deg. turn and was approximately 108 in long. A register with single damper was used at the end of each run. Several tests were made simulating a furnace installation in a small enclosure. Insulating board, ½ in. thick and tightly sealed with asbestos tape, was used for the 48 × 33 in. enclosure, with the area around the burner left open. The cfm of atmospheric air heated was measured at a point prior to its entrance into the furnace. A draft gage with a range from 0 to 0.5 in. of water and a pitot tube were used to measure the velocity head at the throat of the inlet ductwork.

Accuracy Insured in Measuring Devices

Copper-constantan thermocouples with twisted and soft soldered junctions measured the temperatures on the wood surface and on top of the duct and bonnet. Self-compensating potentiometers were used to take the millivolt readings. Ten thermocouple junctions were soft soldered at points on top and centerline of the duct and plenum. Ten thermocouples were placed on the surface of the ceiling directly opposite those on the duct and plenum. The junctions were pressed into the wood and held in position by gluing the adjacent insulated wires to the wood. All leads were connected to multipoint switches and then to potentiometers. All thermocouples were checked for accuracy before using. Air temperatures were obtained using bare mercurial thermometers

(*Continued on page* 116)

WORTHINGTON DEALERS ARE SUCCESSFUL DEALERS!

"Signing up with Worthington was a good move"

. . . says Richard H. Catlett, President of the Catlett-Johnson Corporation, Virginia's leading air conditioning and refrigeration dealers. Mr. Catlett goes on: "In the eight years we've had the Worthington franchise, our dollar volume has more than doubled. Previously, we were identified with another nationally advertised brand. The decision to change was not easy, but the results have been very gratifying. We've expanded our business as a result of Worthington's unrestricted franchise and complete range of products. And Worthington is one outfit that *never* competes with its dealers."

RALPH E. ORCUTT, CATLETT-JOHNSON'S SALES MANAGER SAYS: "Worthington promotion material is second to none — it helps us do a bang-up job. I'm enthusiastic about the way the Worthington people — and the sales aids they create — help us locate prospects . . . and turn them into sales. Worthington's staff of merchandising experts have given us a big hand in the development of a sound dealer program. And Worthington's national reputation helps a lot."

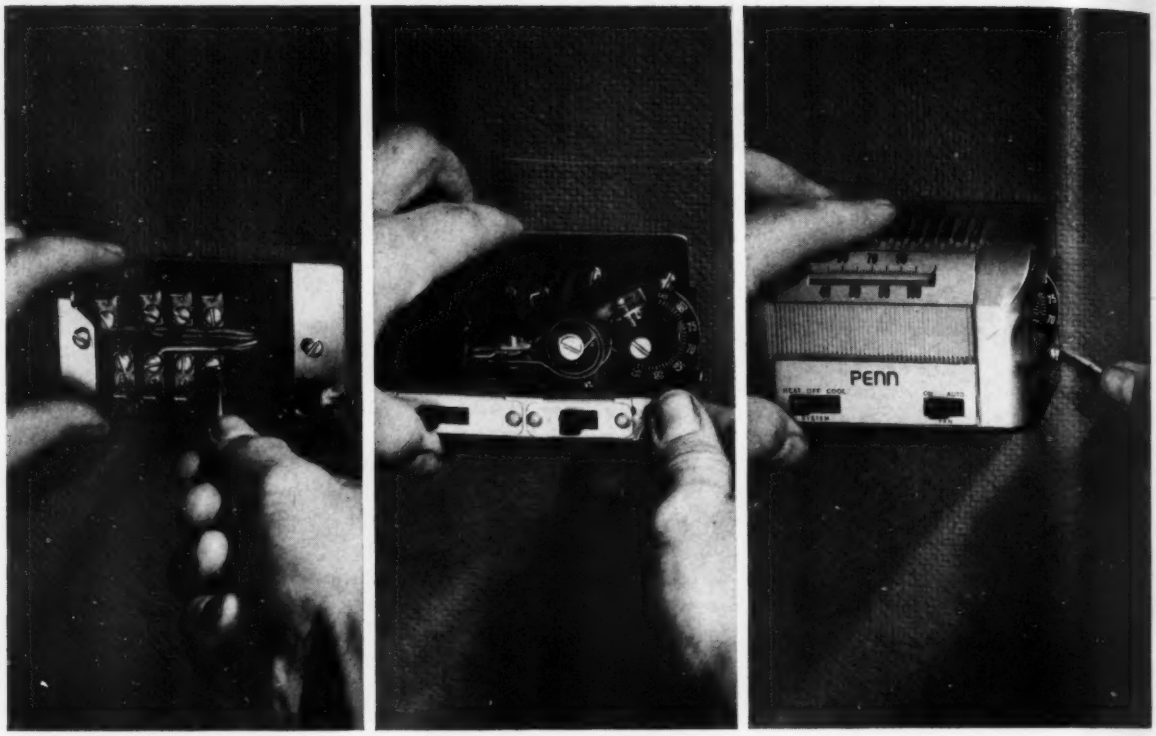
JOHN C. HILDEBRAND, JR., VICE PRESIDENT & CHIEF ENGINEER, SAYS: "The fact that I can rely on Worthington's published engineering data and ratings saves me many hours of engineering time. And Worthington's complete line of equipment allows me to select the units I know will be best for the job. Reciprocating and central station systems, year-round residential units, packaged air conditioners, add-ons — Worthington's got *everything!*"

J. TABB MEYER, JR., OPERATIONS MANAGER, SAYS: "Worthington units are extremely compact, well-designed, and easy to install almost anywhere. You can see the equipment is built with the serviceman in mind — easy accessibility cuts down our maintenance and service time. And Worthington's million-dollar compressor just can't be beat for day-in, day-out reliability. On the off-chance that something may go wrong, Worthington's five-year warranty takes care of it."

Catlett-Johnson's story — like so many others we've received — adds up to this: Worthington dealers are *successful* dealers. And there are plenty more reasons why. Lots of them are mentioned in Worthington's new monthly publication, "The Merchandiser". Write for it today. Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.5.37-A, Harrison, N.J. A.5.37-A

WORTHINGTON

THE BEST FRANCHISE . . . THE MOST COMPLETE LINE



1. Two screws secure mounting base to wall. Then connect wires to terminals.

2. With the cover removed, just push the room thermostat on mounting base.

3. Place cover on thermostat and secure it by tightening two screws . . . one on each end of mounting plate.

3 SIMPLE STEPS TO INSTALL NEW HEATING-COOLING ROOM THERMOSTAT

save time, labor and money

No fuss . . . no critical alignment . . . no hard-to-get-at terminals . . . only the Penn heating-cooling thermostat is so easy to install! But, that's not all. Only Penn gives you "heat anticipation" to hold heating temperature within one-half degree of selected level . . . and, "cold anticipation" to assure closer control of cooling temperature and lowest relative humidity. Be sure the packaged air conditioning you sell and install is equipped with Penn automatic controls.

Penn Controls, Inc., Goshen, Indiana.

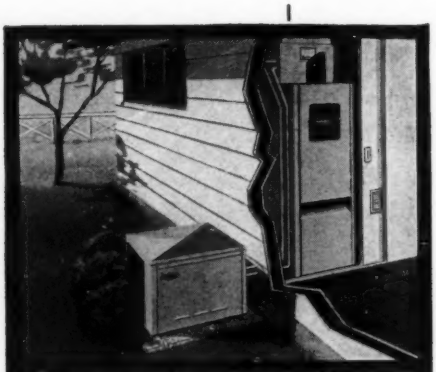
PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

CHRYSLER Airtemp

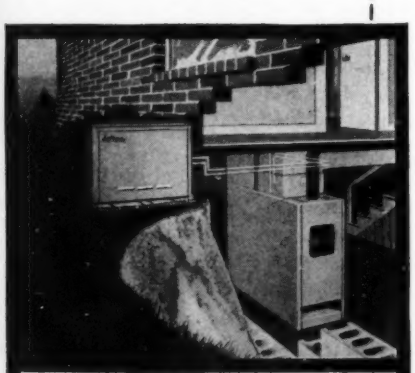
Back of Airtemp is Chrysler—the greatest name in engineering



CLOSET "SPACESAVER"—Airtemp Furnace (gas or oil) with matching "V" coil on top and matching waterless or water-cooled condensing unit outside house (in 2, 3, 5 and 7½ H.P. capacities).

Simplify

your installations with this complete line of flexible heating and cooling units!



BASEMENT "SPACESAVER"—cooling coils can be ordered separately for easy mounting on Airtemp Furnaces (or most other makes) or Airtemp Furnaces may be ordered with coils factory-mounted.

There's *everything* you need to meet every requirement of every job—in the *complete* Airtemp line of heating and cooling equipment. It's the *flexible* line, too! And the line you can always depend on for *perfect* matching of companion heating and cooling units—because they're "made for each other" by Airtemp!

Installations are simpler, easier, faster. Your savings of costly man-hours make every job more profitable. And let you handle additional work without additional manpower!

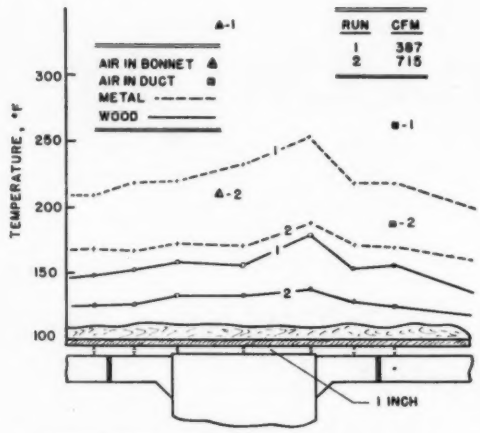
Get all of the facts on today's most profitable opportunity in heating *and* cooling. Write Department AA-11, Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.

Airtemp DIVISION CHRYSLER CORP

HEATING • AIR CONDITIONING FOR HOMES, BUSINESS, INDUSTRY

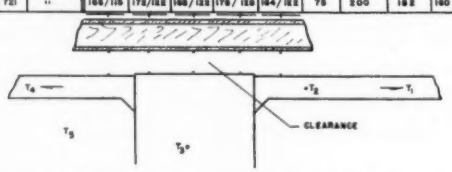
Clearance Tests Vary Operating Conditions

(*Continued from page* 112)

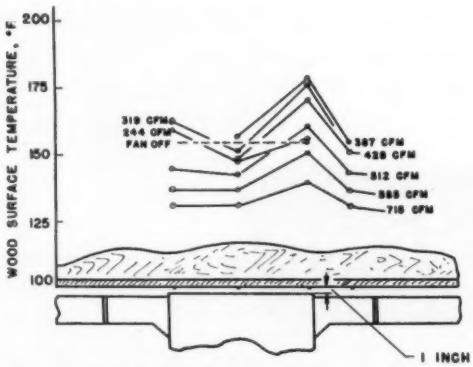


3 HORIZONTAL DISTRIBUTION of wood, duct and plenum, and air temperatures shows relationship of wood to metal temperatures

CLEARANCE IN.	CFM	BURNER OPERATION	TEMPERATURES, °F ON METAL/WOOD					AIR TEMPERATURE, °F INLET T_6	LIMIT CONTROL T_3	AFTER PLENUM T_2	OUTLET T_1	T_4
1	FAN OFF	CYCLING				248/154		79				
1	244	"		224/156	226/146	240/156		72	342	269	220	218
1	319	"	220/151	231/162	226/150	248/176	212/150	77	340	267	230	235
1	387	"	220/152	220/159	232/156	253/178	218/156	82	336	262	226	237
1	428	CONSTANT	210/142	220/150	218/146	240/170	210/150	82	323	251	221	227
1	508	"	202/144	212/144	202/141	222/156	198/138	78	282	226	192	206
1	512	"	194/138	199/143	199/141	225/160	195/142	82	285	227	203	210
1/2	537	"	200/146	214/158	206/164	219/164	197/145	80	250	220	190	204
1	588	"	182/130	186/136	187/136	206/150	186/138	82	248	210	188	194
1	716	"	167/121	172/129	170/129	188/138	171/128	80	210	188	169	175
1	721	"	166/115	173/128	168/122	178/128	164/122	75	200	182	160	170



4 TEST INFORMATION supplies tabulation of variation of air, metal and wood temperatures with cfm and clearances



5 ONE INCH CLEARANCE and bonnet limit control setting of 300 F produced this relationship of ceiling temperature to cfm

except in the bonnet. The inlet air temperature was taken at the entrance to the rate of flow measuring device. The temperature in the bonnet was taken 4 in. above the heat exchanger surface and 3 in. to one side of the approximate center of the bonnet, with a mercurial thermometer which was shielded with a coat of aluminum paint to reduce the effect of radiation from the hot surface of the heat exchanger. The temperature of the air leaving the bonnet was taken at a point in the duct where the thermometer could not "see" the heat exchanger. The exit air temperatures were taken at points in the duct before leaving registers.

One of the simulated duct-in-joist arrangements is shown in Fig. 1, where 3/4 in. plywood was used to enclose the duct as tightly as possible. (The largest gap was about 1/16 in.) In one test the enclosure was 34 in. long; in another, 7 ft. The latter arrangement had a double thickness of plywood. Three thermocouples were attached, in a manner similar to that described above, to each of the inner sides and top, in positions opposite to thermocouples on the duct. Tests were made with and without a bottom board.

Procedures and Conditions Are Varied

The warmup period was approximately three hours. Three readings were taken at half hour intervals after steady-state conditions were reached for each test condition. This data was averaged for the results. The dampers were used to obtain desired bonnet air temperatures by varying the volume rate of flow of air, and to obtain approximately equal quantities of air through each duct. When temperatures at the bonnet limit control exceeded the setting and burner cycling occurred, only data at points of maximum temperatures was observed and recorded. Fan-off condition was obtained by removing the power supply to the fan motor.

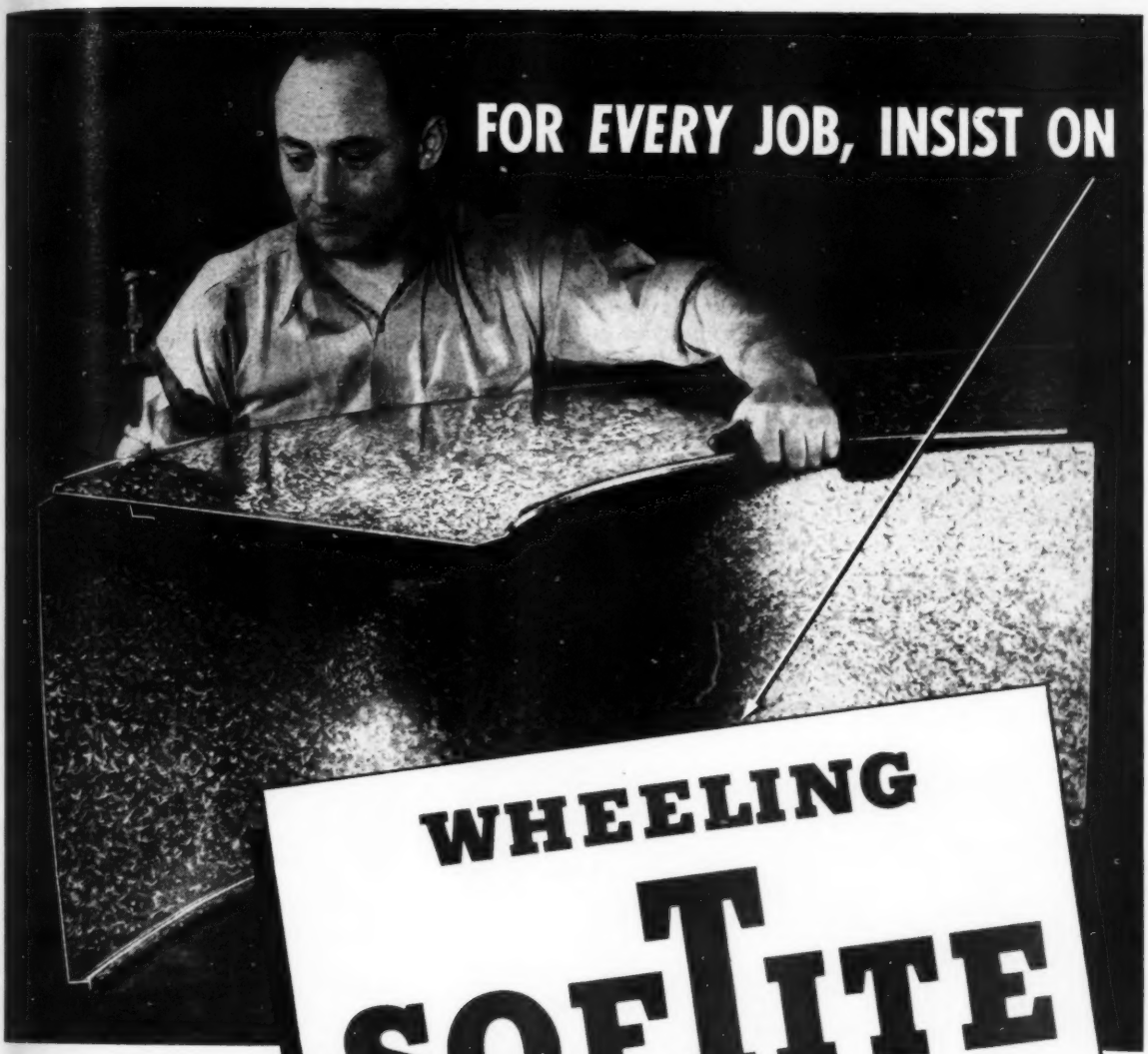
The cfm of atmospheric air was obtained by measuring the velocity head with a pitot tube at the center of a circular section of known dimension. A horizontal and vertical transverse were made to establish the relation of velocity of air at the center to mean air velocity. The following equation obtained cfm of atmospheric air:

$$Cfm = A \times C \sqrt{\frac{\rho_{std}}{\rho_{atm}}} \times 4008 \sqrt{h}$$

where A = cross-sectional areas of duct; ρ_{std} = density of standard air; ρ_{atm} = density of atmospheric air; C = ratio of mean air velocity to air velocity at center; h = velocity head of air at center, in. of water.

The horizontal temperature distribution of: a) air in bonnet and duct, b) top surface of bonnet and duct, and

(*Continued on page* 120)



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Galvanized steel does it better... SOFTITE does it best!

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On duct-insulation jobs—

Low installation cost of Microlite and L·O·F Super·Fine can clinch the contract

Speed and ease of application can mean the difference in cost it takes to clinch a big insulation contract. That's why many contractors use L·O·F Glass Fibers' Super·Fine and Microlite to cut application costs without sacrificing insulating efficiency.

You'll find it simple to apply—These soft-textured blankets are pleasant to handle, quick to apply. Require no special tools or skills. Lightweight, resilient L·O·F Super·Fine and Microlite fill hard-to-reach places and are easy to manage on tall ladders or scaffolds. An unskilled worker can apply an average of 500 square feet of insulation a day.

The high insulating efficiency of Microlite and L·O·F Super·Fine results from the countless dead air cells formed by millions of fine glass fibers, which effectively reduce heat loss or gain.

Save on storage space, too—L·O·F Super·Fine and Microlite come in tightly compressed rolls that take up less space and spring back to full thickness when unrolled. Available in blanket form up to 72″ wide, 5″ thick and from 50′ to 200′ long, depending on thickness. Also available with various facings to meet different insulation and code requirements.

Save on duct application costs with Microlite or L·O·F Super·Fine duct wrap and duct liner. Look in the Yellow Pages of the telephone directory for the name of our nearest distributor, or write: L·O·F Glass Fibers Company, Dept. 45-115, 1810 Madison Avenue, Toledo 1, Ohio.

Time- and cost-saving steps in a typical duct application

1. Super·Fine and Microlite cut easily with an ordinary knife. No precision measuring or fitting required. In this case, adhesive is brushed on the insulation.

2. Lightweight, strong blankets of Microlite or Super·Fine handle easily on scaffolds or ladders.

MICROLITE

L·O·F GLASS FIBERS

SUPER·FINE

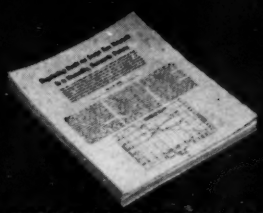
L·O·F GLASS FIBERS COMPANY

TOLEDO 1, OHIO

Makers of glass fibers by the exclusive "Electronic-Extrusion" process

3. Super·Fine and Microlite can be fitted quickly around the duct and supporting hangers. Light-gauge wire ties complete the job.

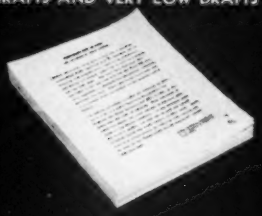
INSTALLING DEALER'S HANDBOOK

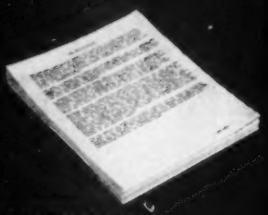


REGULATING DRAFT ON LARGE GAS BURNERS IS A NECESSITY

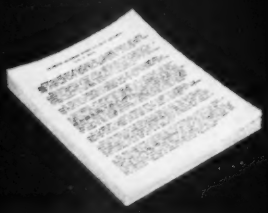
PERFORMANCE TESTS ON FIELD "SNA" INCINERATOR DRAFT CONTROLS

CONTROL OF UNUSUALLY HIGH DRAFTS AND VERY LOW DRAFTS



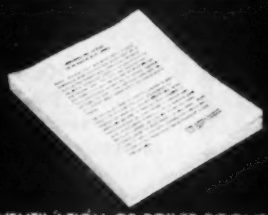


LONG BREECHINGS



FLUE LOSSES AND EFFICIENCY

SELF SUPPORTING STEEL STACKS



VENTILATION OF BOILER ROOMS

OFF PERIOD LOSSES

SPECIFICATIONS AND INFORMATION FOR ARCHITECTS AND ENGINEERS

field

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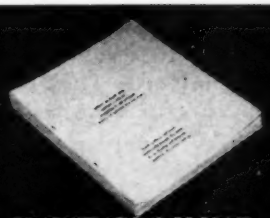
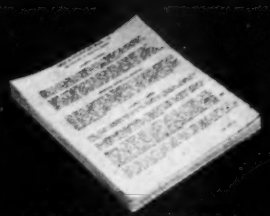
FIELD CONTROL DIVISION

By E. W. Potter

ALIBRATED ADJUSTMENT WEIGHTS RAFT REGULATORS



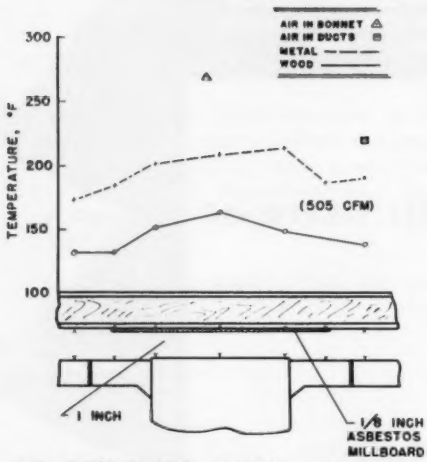
DEMONSTRATIONS OF DRAFT CONTROLS BY "COLD TESTS"



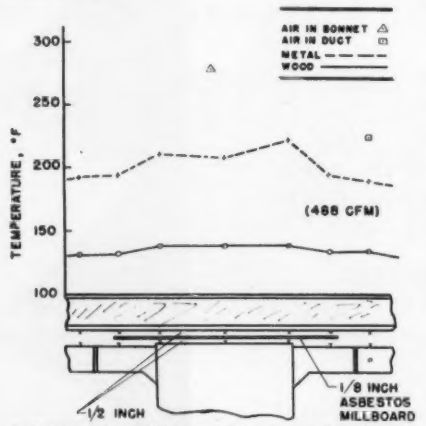
PACKAGED STEAM BOILERS

Clearance Tests Cover Metal-Wood Temperatures

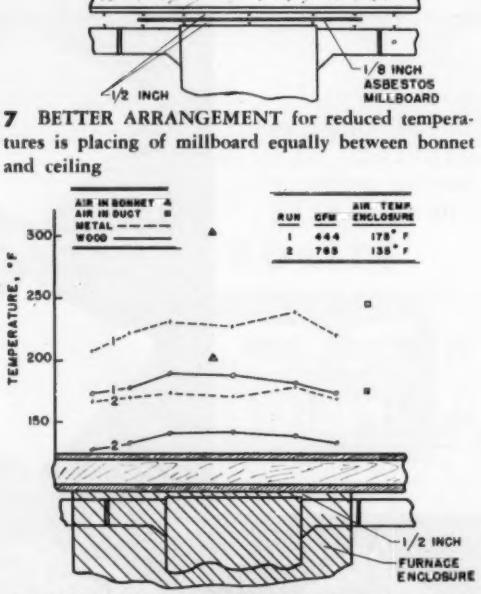
(*Continued from page* 116)



6 AIR, METAL AND WOOD temperatures are lower with millboard insulation nailed to ceiling than without insulation



7 BETTER ARRANGEMENT for reduced temperatures is placing of millboard equally between bonnet and ceiling



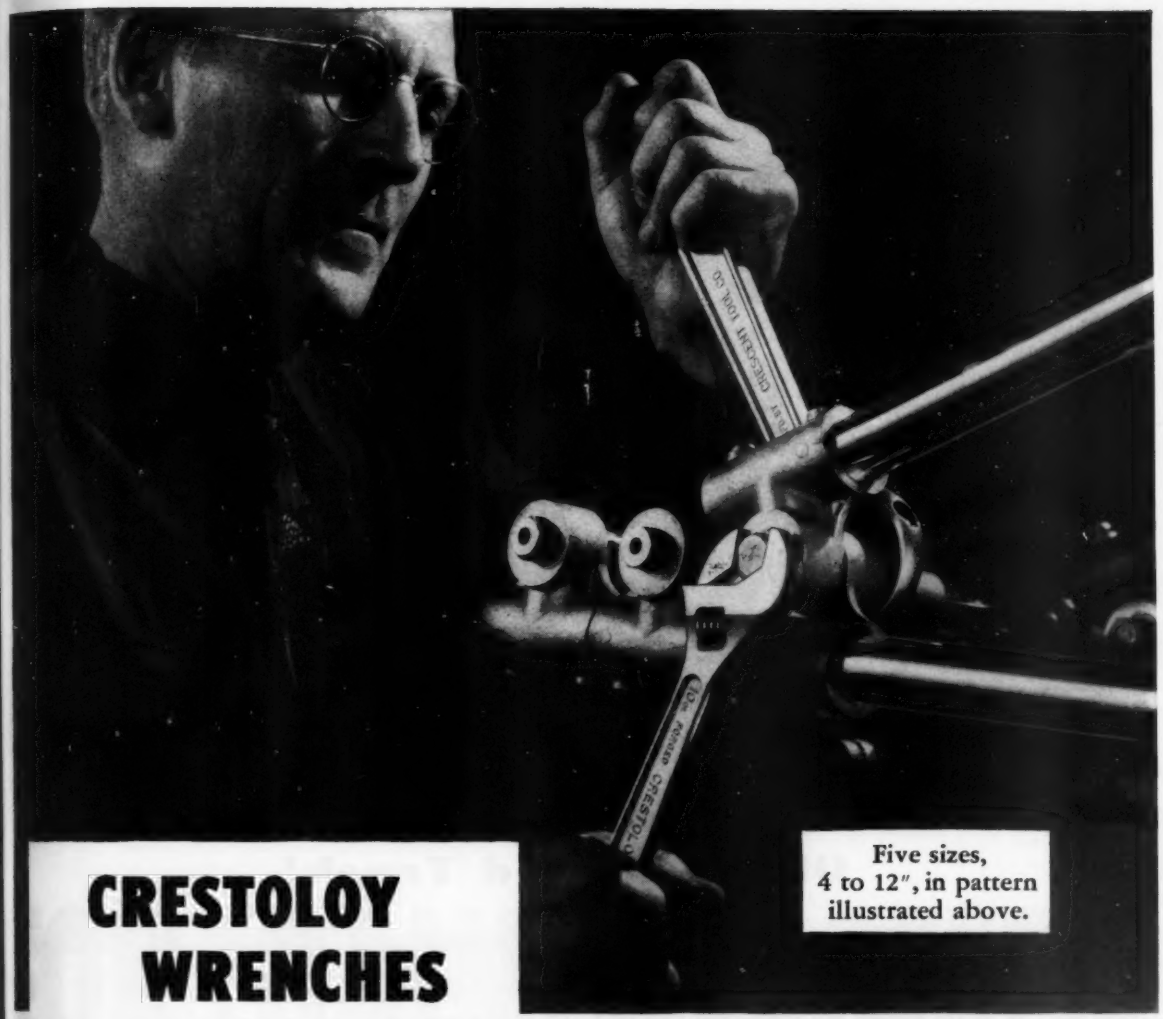
8 HORIZONTAL TEMPERATURE distribution in wood, duct and plenum, and air was again tabulated with furnace and plenum with small sealed enclosure

c) wood surface for different cfm of air and 1 in. clearance between ceiling and bonnet is given in Fig. 3. Since the temperature of the wood depends on the temperature of the adjacent metal surface, the highest wood temperature occurs at a point adjacent to the highest metal temperature. Note that the highest metal temperatures on top of the plenum for each run occurred at the entrance to the ducts, and not at the center of the plenum. The flow distribution and resultant higher velocities increased the forced-convection heat transfer from the air to the metal at entrance to ducts. The temperature drop between the metal and wood with 1 in. clearance was 40 to 70 deg with the larger drop occurring at the higher temperatures.

Analysis Shows Relationships

In Fig. 5, a relationship between ceiling temperatures and cfm of air is given, where the clearance was 1 in. and bonnet limit control setting was 300 F. The temperature of the ceiling surface depends on the clearance and the temperature of the metal surface, since heat is transferred by radiation and natural convection. The temperature of the metal depends on heat transfer to the metal by radiation from the heat exchanger and forced convection from the higher temperature air. Hence, the temperature on top of the bonnet is dependent on the temperature and cfm of the air. When the electrical circuit to the fan motor was broken for the fan-off condition, the burner cycle consisted of 2 minutes on and 10 to 11 minutes off. The effect of small amounts of air moving by natural convection, and hence the cooling of the heat exchanger during the period the burner was off, was to reduce the metal temperatures and consequently wood temperatures. When the fan was operating and delivering up to 387 cfm, the wood temperatures increased as the cfm was increased, for in this cfm range higher bonnet surface temperatures occurred when there was a combination of heat transfer to the top surface by radiation and forced convection. However, maximum temperatures were not obtained when the maximum cfm of air passed by the heat exchanger, for there was a greater amount of air to absorb approximately the same amount of heat energy from the heat exchanger with constant firing and consequently a smaller temperature rise in the air. The heat exchanger surface was colder and hence less heat was radiated to the bonnet surface. The combination of less radiation and colder air was responsible for the lower metal and wood temperatures. Note that the maximum wood temperature encountered was approximately 175 F. This occurred at a limit control setting of 300 F and corresponding temperatures in the

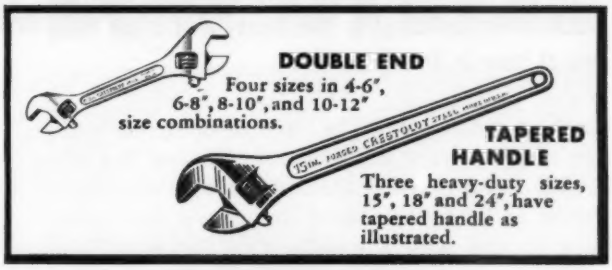
(*Continued on page* 124)



Five sizes,
4 to 12″, in pattern
illustrated above.

CRESTOLOY WRENCHES

Forged from Crescent's own CRESTOLOY Steel, these fine wrenches are 200% stronger and 30% thinner than conventional adjustable wrenches. They are hardened by a selective induction process which guarantees longer life through a combination of surface hardness and interior toughness. Chrome plate finish. Sold by Industrial Distributors and Hardware Dealers everywhere.



DOUBLE END
Four sizes in 4-6″, 6-8″, 8-10″, and 10-12″ size combinations.

TAPERED HANDLE
Three heavy-duty sizes, 15″, 18″ and 24″, have tapered handle as illustrated.

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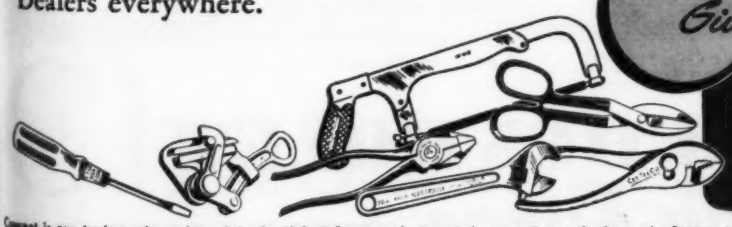
Sign of the Artisan
Symbol of Excellence



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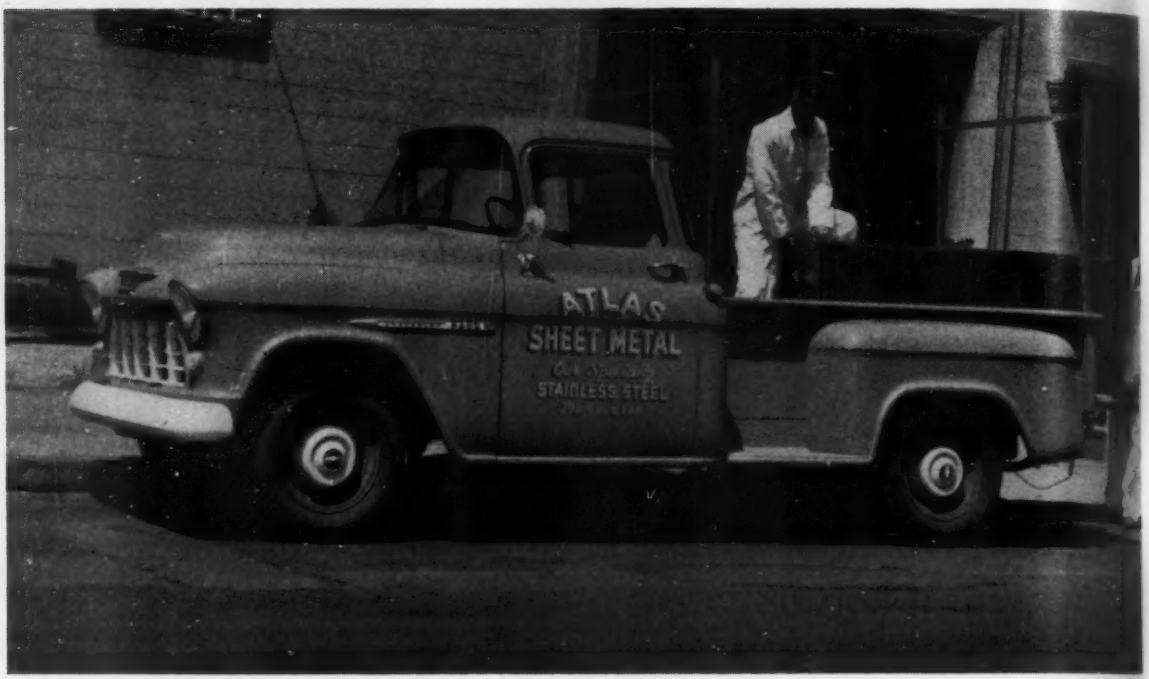

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If you don't get all the modern advantages new Chevrolet trucks offer, you stand to lose money on the job today and at trade-in time tomorrow!

Look at it this way. The more modern the truck, the more quickly and efficiently it does the job. And if it's loaded with ultra-modern features, you're bound to be farther ahead at trade-in time. Now look at the way Chevrolet fills the bill. Even so-called new trucks are old fashioned without all these Task-Force advantages!

Shortest stroke V8's* of any leading truck—the most modern truck engines money can buy! Their compact, short-stroke design means longer life because of less friction and wear. Chevrolet's extra-rugged and dependable high-compression Sixes are ultra economical to keep humming. They squeeze more power out of a tankful of gas!

The latest in cab comfort and safety—new High-Level ventilation, panoramic windshield, concealed Safety Steps—features that boost driver efficiency!

Most modern chassis features—new suspension, more rigid frames, tubeless tires standard on ½-ton models!

Work Styling—Here's light- and medium-duty styling that's matched to the job; modern styling that calls attention to your business! Your Chevrolet dealer has complete details. See him soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**V8 standard in L.C.F. models, an extra-cost option in all others except Forward-Control models.*

NEW CHEVROLET *Task-Force* TRUCKS

CHEVROLET

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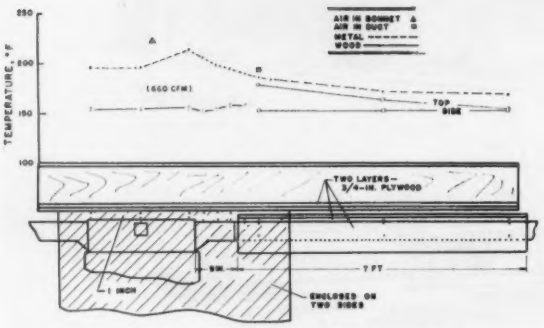
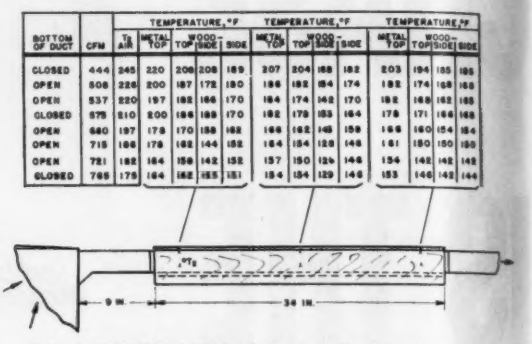
Boston	Cleveland	Grand Rapids	Los Angeles	New Orleans	Providence
Charlotte	Dallas	Houston	Milwaukee	New York	Rochester
St. Louis	San Francisco	Seattle	Waterbury		

Test Results Permit Revision of Fire Clearances

(*Continued from page* 120)



9 TEMPERATURES OF WOOD ceiling, duct enclosure, metal and air were obtained with a plenum 10 in. high with 1 in. clearance



BOTTOM OF DUCT	CFM	TEMPERATURE, °F: Ta AIR	METAL TOP	WOOD— TOP	WOOD— SIDE	SIDE	TEMPERATURE, °F: METAL TOP	WOOD— TOP	WOOD— SIDE	SIDE	TEMPERATURE, °F: METAL TOP	WOOD— TOP	WOOD— SIDE	SIDE
CLOSED	444	245	220	206	208	189	207	204	188	182	203	194	185	185
OPEN	508	228	200	187	172	180	186	182	164	174	182	174	158	160
OPEN	537	220	197	182	166	170	184	174	162	170	182	168	152	165
CLOSED	575	210	200	186	188	170	182	178	183	164	178	171	166	168
OPEN	660	197	178	170	158	162	166	162	148	158	166	160	154	154
OPEN	715	186	178	162	144	152	164	154	128	148	161	150	150	150
OPEN	721	182	164	158	142	152	157	150	134	146	154	142	142	142
CLOSED	765	178	164	162	155	151	154	154	129	146	153	146	142	144

10 TEST SUPPLIES tabulation of temperatures encountered on wood and duct with two simulated duct in joist arrangements

bonnet at the bonnet limit control and of the air in the duct of 336 and 262 F, respectively.

Results of tests with asbestos millboard sheet nailed to the ceiling above the plenum or equally spaced in the clearance between bonnet and ceiling (see Figs. 6 and 7) indicate that the overall effects are added resistance to heat transfer and 15 to 30 deg lower temperatures over similar test conditions without millboard. Again, bonnet limit control setting was 300 F.

The temperatures of the wood, metal and air when the furnace and plenum were within a small sealed enclosure are given in Fig. 8. The clearance between bonnet and ceiling was ½ in. The maximum ceiling temperature was less than 190 F when the temperatures of the air inside the bonnet at the limit control and within the enclosure were 300 and 175 F respectively, and cfm was 444. With the cfm of air increased to 765, the temperatures were reduced and only 5 deg difference existed between maximum ceiling temperature and surrounding air within the enclosure.

The results given in Figure 9 were obtained with a plenum 10 in. high with 1 in. clearance, 0.2 in. water static pressure, or 680 cfm, in duct and the bonnet limit control (set at 250 F) located centrally 2 in. from the top. Constant burner operation occurred throughout the test and air temperature at the bonnet limit control was 224 F. The highest wood temperature on the ceiling under these conditions was 159 F. In comparing the results of this test with tests on 24 in. high plenum at 660 cfm, the metal temperatures on the top of the 24 in. plenum were approximately 20 deg less than the temperatures that occurred on the 10 in. high plenum. The wood temperatures were about 15 deg less.

The temperatures encountered on the inner wood surface and outer metal duct surface for simulated duct-in-joist are given in Figures 9 and 10. The wood acts as insulation, so the metal temperature approaches the temperature of air in the duct. Hence the duct temperature depends upon the temperature and velocity of air in the duct and the overall heat transfer coefficient. If the wood is in contact with metal, the junction of both will essentially be at the same temperature. Obviously, the greater the space between, the greater the temperature difference. It appears that the wood temperature for an enclosure of a duct could be within 10 deg of the temperature of the air in the duct.

Conclusions Prove the Point

The following conclusions may be drawn from the test work using an oil-fired forced warm air heating unit described herein:

1) Excessive temperatures, with reference to a generally regarded allowable temperature of 175 F, would not occur on a combustible ceiling 1 in. from the top of a 24 in. high bonnet, since the maximum wood temperature of 178 F occurred for the following test conditions:

Bonnet limit control setting at 300 F;

Temperature of duct air at 262 F;

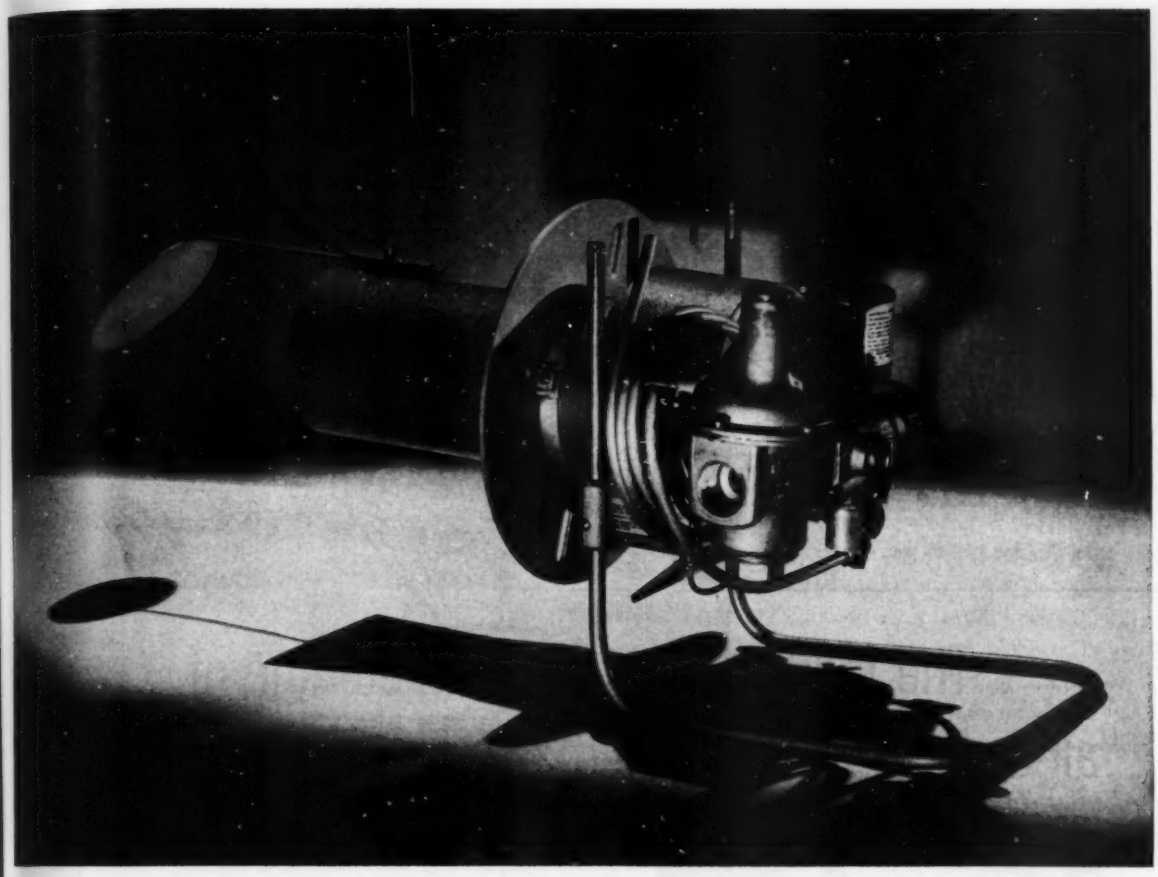
Volume rate of air flow at 387 cfm.

2) Under similar test conditions, insertion of a noncombustible material in the clearance space reduced the wood temperatures 15 to 30 deg.

3) Highest metal temperatures occurred on top of plenum at duct entrance.

4) The maximum wood temperature occurred at an interim volume rate of flow; *i.e.*, 387 cfm. The highest values for ceiling temperature, when the furnace operated at the rated cfm and at fan-failure conditions, were approximately 145 and 155 F respectively.

5) The highest wood temperature for a 10 in. plenum was 159 F with 1 in. clearance, 0.2 in. water static pressure in duct, and the bonnet limit control located centrally 2 in. from the top and set at 250 F.



This Quality Burner costs you less than any comparable model

Lowest-priced burner in the field ... easiest to install ... practically no service calls ... that's what our dealers are saying about the new Barber GUN-HEAT gas conversion burners.

Look at the GUN-HEAT model shown above. It's the popular SNG 1-A designed for converting oil-fired boilers and furnaces to gas. AGA tested and listed from 65,000 to 185,000 BTUH on natural and mixed gases. Other models are available up to 350,000 BTUH.

Because we know that repeated service calls can gobble up dealer's profits, Barber engineers have wrapped up 35 years of burner know-how in the GUN-HEAT to make it trouble-free in operation and easy to install correctly.

The SNG 1-A, for example, has no moving parts. The venturi is super-strong pressed steel and the blast tube is seamless welded.

How can quality burners be priced so low? Briefly, because this burner is designed for specific applications, we have been able to standardize on parts and substitute steel fabrications and steel stampings in place of costly castings. The result is mass production methods for Barber — and lower costs for you.

Write for specifications and prices on the GUN-HEAT to the address below.

THE Barber MANUFACTURING COMPANY

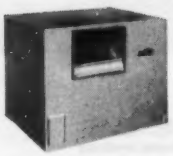
GAS AND OIL BURNER DIVISION

3701 Superior Avenue, Cleveland 14, Ohio • HE 1-6045

in tremendous demand
for home and business

usAIRco **Kooler-aire system for "waterless" air conditioning**

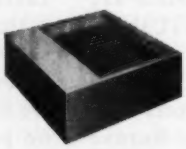
The industry's most complete line of "air-cooled"... in matched 2, 3, 5 & 7½ h.p. models!



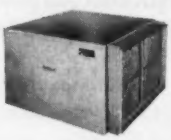
CONDENSING UNIT
compressor,
condenser coil,
blower, receiver

HORIZONTAL AIRFLOW COOLING COIL
coil,
expansion valve,
drain pan

VERTICAL AIRFLOW HOUSED COIL
v-type coil,
expansion valve,
drain pan



COUNTER FLOW HOUSED COIL
coil, expansion valve,
drain pan



COIL-BLOWER HOUSED SETS
filter, coil
expansion valve,
drain pan, blower.

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30 YEARS OF AIR CONDITIONING

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CORPORATION
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Meet today's growing demand for waterless air conditioning with the most efficient equipment built . . . usAIRco Kooler-aire. Kooler-aire operates on electricity only, ideal where water is scarce or expensive, and where water disposal is a problem. The condensing unit is usually located out-of-doors, but may be installed indoors when vented. Cabinet is weatherproof. Copper tubing carries the refrigerant from the condensing unit to the Kooler-aire coil, which may be installed anywhere on the outlet side of the air supply system. Where an independent blower system is needed, usAIRco provides a housed coil-blower unit with optional filter section.

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at the lowest prices in history

NO SHOP CAN AFFORD TO BE WITHOUT ONE OF THESE 3 RUGGED NEW SKIL SAWS

New 6½" Model 864 only $64.50

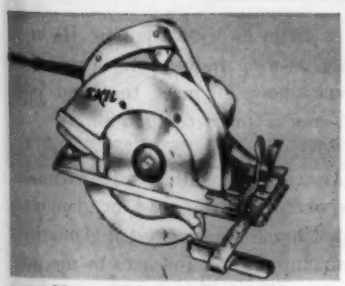
New heavy duty SKIL Saws offer a light weight compact answer to every cutting problem in the shop or on the job.

You'll find one of these SKIL Saws ideal to help you on every one of your heating, air conditioning or sheet metal jobs. This is a real heavy-duty construction tool, yet it's priced so low that it'll pay for itself in no time. Light weight, compact, powerful . . . use it to cut floor openings, duct entries, all materials including sheet metal, plaster, composition and even concrete.

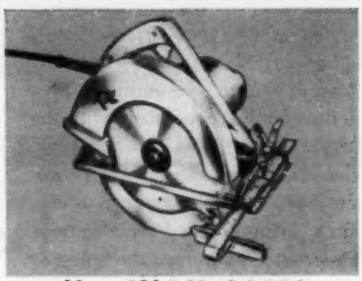
3 sizes—6½", 7¼", 8¼"—give you the right capacity for every job. New low prices give you big savings. And, all the famous SKIL features assure more profitable operation for you.

Exclusive SKIL features for better performance

- **Extreme light weight and the famous SKIL balanced design for easy handling.**
- **Easy, fast cutting in any position.**
- **High speed blade.**
- **Rugged, heavy-duty motor.**
- **Strong die-cast aluminum motor housing.**
- **Ball and needle roller bearings throughout.**
- **Quick-acting depth & bevel adjustment.**
- **Calibrated rip fence for both right and left hand cuts.**
- **Safety guard retracting handle for pocket cuts.**



New 7¼" Model 874 only $74.50



New 8¼" Model 884 only $84.50

BRIEF SPECIFICATIONS			
Model No.	864	874	884
Blade Diameter	6½"	7¼"	8¼"
Maximum Depth of Cut	2⅛"	2⅜"	2⅞"
Depth Cut at 45°	1¾"	1⅞"	2⅛"
No-Load Speed	6100 r.p.m.	6000 r.p.m.	5700 r.p.m.
Net Weight	11 lbs.	13½ lbs.	14¾ lbs.

SKIL PORTABLE TOOLS

Made only by SKIL Corporation
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Factory Branches in All Leading Cities

Call your SKIL distributor for a Free on-the-job demonstration and a Free Trial

OHI Builders Clinic Underlines Selling

- **The heating installation must, through appearance and efficiency, serve as a selling tool for the builder**
- **The builder must be convinced of the availability of service after the house is sold**
- **A better selling job by the entire industry is called for. Advantages over other types of heating must be stressed**

SELLING THE BUILDER on the importance of the heating system keynoted a builder's clinic management conference sponsored by the Oil Heat Institute of America in cooperation with Rutgers university in Atlantic City.

More than 80 manufacturers, wholesalers, and dealers heard the heating story as presented by five qualified speakers.

Furnace Is Sales Tool

Irwin G. Jalonack, registered professional engineer, formerly vice president and chief engineer, Levitt & Sons Inc., said product presentation is not the major point in selling the builder; what he wants to know is "Will the product help sell the house to the public?" Special features, eye-appeal and brand name are the points to advance, he stated.

Service is of vital concern to the builder, he stressed; the builder must be convinced that everybody concerned with the heating installation will follow through with prompt and efficient service when needed.

Gerrard Berman, president, Gibraltar Homes, Inc., secretary of Home Builders Assn. of Northern New Jersey and director, New Jersey State Home Builder's Assn., listed selling factors for the type of heat recommended as quality, durability and availability of service, in order of importance. He said builders don't have the time or the inclination to be heating salesmen; instead, the type of heating recomended must do a selling job for them. Therefore, Mr. Berman believes, the buyer should not be allowed to choose between oil and gas heat, because such a situation leaves the burden of selling one system over the other in the builder's lap.

The service factor should be played up by the dealer, he urged.

He also underlined the need for cooperation between the manufacturer, wholesaler, dealer and builder, with proper engineering and supervision of installation and service by the manufacturer. He outlined three points for better cooperation with the builder: 1) a one year guarantee on service and equipment; 2) a brochure from the manufacturer or distributor giving detailed specifications and guaranteeing to heat the house to 70 F with outside temperature at zero F; 3) a complete set of heating plan drawings to be submitted for appraisal.

CLOSER cooperation among dealers, wholesalers, manufacturers and builders is called for

Associations Praised

Anthony S. Zummo, first vice president, Long Island Home Builder's Institute, commended trade association and industry conferences for eliminating much unethical competition and piracy.

He listed several abuses which are unnecessary: incorrectly located thermostats, damaging of units on delivery, careless installations and poor and incomplete combustion.

He stressed the need for honest and accurate specifications and more aggressive industrywide merchandising.

Solve Split-Level Problems

Arthur Watkins, associate editor, House and Home, warned of the growing competition of electricity for winter and summer air conditioning in the form of heat pumps. He urged the heating industry to begin selling know-how to meet this and other forms of price competition.

Herman York, member of the American Institute of Architects, spoke up for the need for glamour in new homes. He suggested glamorizing and upgrading furnaces to the point where they will become accepted as a kitchen fixture. He theorized that the closer the heating unit gets to the core of utility, the lower will be the builder's installation costs.

An immediate need, he emphasized, is for selling the homeowner on the necessity for paying for adequate heating installations in split level houses.

Tired of it?

Ever have the "rug pulled out from under you" on the BIG jobs by *factory* competition? That's *not* Perfection's way of doing business. We respect the dealer's rights to *all* the jobs in his territory. That's why Perfection dealers never worry about factory competition. Frankly . . . we *help you* sell the big jobs. And only Perfection offers the exclusive Regulaire and the 3-Stage Fire. So, why continue to be a "fall guy". . . write Perfection Industries, Division of Hupp Corp., Dept. 7616-K, Platt Ave., Cleveland 4, Ohio.

TALK TO **Perfection**
AUTOMATIC HEATING

Housing Census Heating Data

Charleston, W. Va. • Macon, Ga. • New Orleans • Providence • Tampa

SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the November 1954 American Artisan. Localities covered in the reports are metropolitan areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

	Standard Metropolitan Areas									
	Charleston, W. Va.			Macon, Ga.			New Orleans, La.			
	The area	Fayette County	Kanawha County	The area	Bibb County	Houston County	The area	Jefferson Parish	Orleans Parish	St. Bernard Parish
All dwelling units	87,485	21,009	66,476	38,859	32,939	5,920	207,086	30,246	173,608	3,232
Number reporting heating equipment	81,790	19,540	62,250	36,770	31,600	5,170	194,115	27,920	163,210	2,985
Central heating	20,410	3,660	16,750	5,955	5,670	285	38,930	7,580	31,040	310
Coal	1,345	1,165	180	500	400	100	630	60	565	5
Wood	35	10	25	45	45	...	310	15	285	10
Utility gas	18,540	2,350	16,190	4,920	4,895	25	35,300	7,275	27,760	265
Bottled gas	25	...	25	100	90	10	395	85	290	20
Liquid fuel	30	15	15	260	140	120	1,730	85	1,640	5
Other fuel	345	90	255	100	70	30	330	35	290	5
Not reporting	90	30	60	30	30	...	235	25	210	...

	Standard Metropolitan Areas									
	Providence, R. I.							Tampa, Fla.		
	The area	Bristol County, R. I.	Kent County, R. I. (Part)	Providence County, R. I. (Part)	Washington County, R. I. (Part)	Bristol County, Mass. (Part)	Norfolk County, Mass. (Part)	Worcester County, Mass. (Part)	The area	Hillsborough County	Pinellas County
All dwelling units	221,800	9,566	21,930	166,231	3,634	12,764	5,737	1,918	152,612	81,372	71,240
Number reporting heating equipment	210,540	8,125	19,070	161,245	3,045	12,320	4,875	1,860	128,805	73,180	55,625
Central heating	123,090	4,090	12,495	91,955	1,870	8,760	3,235	685	12,150	3,375	8,775
Coal	40,555	790	2,875	31,575	790	3,135	1,140	250	330	165	165
Wood	490	10	50	335	10	15	40	30	300	95	205
Utility gas	7,965	130	270	7,395	10	135	15	10	2,830	530	2,300
Bottled gas	345	10	30	245	20	10	25	5	310	110	200
Liquid fuel	69,765	3,085	8,700	49,370	1,020	5,295	1,915	380	7,440	2,125	5,315
Other fuel	3,200	50	510	2,400	20	115	95	10	775	290	485
Not reporting	770	15	60	635	...	55	5	...	165	60	105

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Charleston, W.Va. — Fayette and Kanawha Counties															
All occupied units	78,820	58,660	10,615	4,775	2,670	2,100	35,450	31,940	3,510	43,370	26,720	8,200	4,190	2,545	1,715
HEATING EQUIPMENT															
Central heating	20,045	14,598	2,408	918	794	1,327	12,124	10,813	1,311	7,921	3,785	1,665	834	669	966
Piped steam or hot water	4,501	2,247	648	276	483	847	1,416	1,295	121	3,085	952	555	248	483	847
Warm air furnace	15,544	12,351	1,760	642	311	480	10,708	9,518	1,190	4,836	2,833	1,110	586	186	121
Noncentral heating, with flue	27,224	22,006	3,043	1,068	724	383	10,698	9,858	840	16,526	12,148	2,370	901	724	383
Nonctrl. htng., without flue; or not htd.	29,290	20,399	4,883	2,649	1,077	282	11,843	10,562	1,281	17,447	9,837	3,908	2,343	1,077	282
Not reported	2,257	1,656	279	141	74	107	781	704	77	1,476	952	256	113	74	81
YEAR BUILT															
1945 or later	12,197	10,255	1,159	433	187	163	7,839	7,437	402	4,358	2,818	842	384	151	163
1940 to 1944	7,503	5,656	1,050	256	104	439	4,672	3,867	805	2,833	1,789	733	207	50	54
1939 or earlier	57,193	41,612	8,055	3,852	2,177	1,497	22,536	20,257	2,279	34,657	21,355	6,299	3,364	2,142	1,497
Not reported	1,926	1,138	350	236	202	...	403	379	24	1,523	759	326	236	202	...

(*Continued on page* 132)

Little forming is needed—no welding or finishing is necessary in this simplified-construction stainless sink top. Use of flat, polished stainless sheets to cover plywood tops, and stainless molding, makes a pleasing, economical job. Construction is similar to that of the kitchen equipment shown here. You can buy drawn sink bowls and molding from manufacturers. Armco Stainless Steel sheets for work surfaces are available from your Armco Distributor.

How to cash in on kitchen remodeling

Demand for custom-built stainless steel kitchen equipment in new and remodeled homes is growing. You can cash in on this trend by arranging to supply custom stainless parts to your local kitchen remodelers.

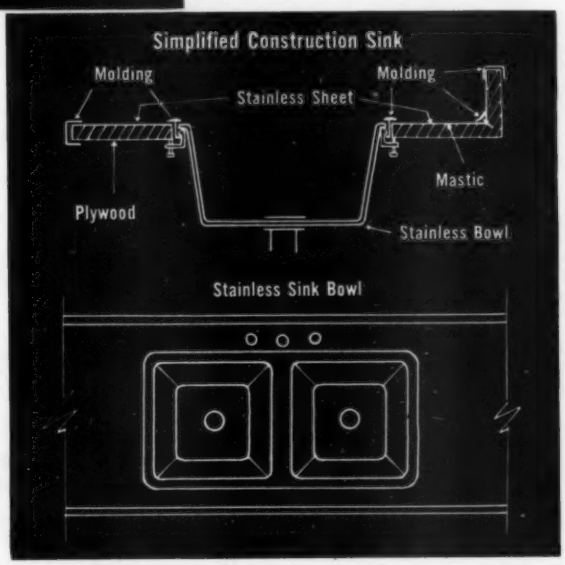
One reason for the swing to stainless is **price.** New, simple construction methods bring the cost of stainless equipment down to the level of other commonly used materials.

You can make extra profits with many kinds of custom-built stainless work for the home—kitchen and laundry work surfaces, range hoods and kitchen cabinets, door kick and push plates, and roof drainage systems.

Remember, you can recommend Armco Stainless Steel with confidence. It stays beautiful, resists denting and scratching, and is easy to keep clean.

Tell your local kitchen remodelers how you can team up with them on their jobs. And check with your Armco Distributor about the many architectural applications of Armco Stainless. He'll see that you get stainless steel when you need it.

Just fill in and mail the coupon for complete information.



ARMCO STEEL CORPORATION | **1225 CURTIS STREET, MIDDLETOWN, OHIO**

☐ **Send me names of manufacturers of stainless sink bowls and molding**
☐ **Send me name of my nearest Armco Distributor**

NAME_____

COMPANY_____

STREET_____

CITY_____ ZONE_____ STATE_____

ARMCO STEEL CORPORATION 1225 CURTIS ST., MIDDLETOWN, OHIO

SPECIAL STEELS

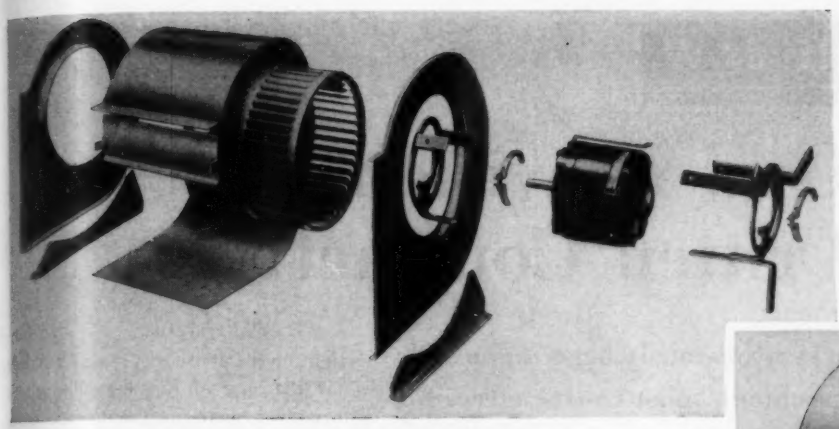
SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • ARMCO INTERNATIONAL CORPORATION

Housing Census Heating Data

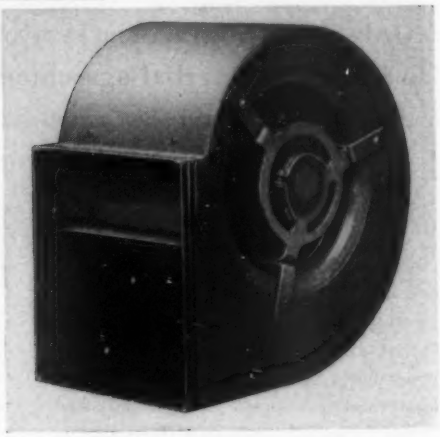
(*Continued from page* 130)

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied				
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Macon, Ga. — Bibb and Houston Counties															
All occupied units	33,575	19,775	8,105	2,750	2,210	735	13,890	11,865	2,025	19,685	7,910	6,495	2,380	2,180	720
HEATING EQUIPMENT															
Central heating	4,978	3,306	913	327	216	216	3,350	2,949	401	1,628	357	606	240	216	209
Piped steam or hot water	1,578	741	370	225	96	146	785	585	200	793	156	242	160	96	139
Warm air furnace	3,400	2,565	543	102	120	70	2,565	2,364	201	835	201	364	80	120	70
Noncentral heating, with flue	15,170	9,393	3,604	606	1,102	465	4,451	4,075	376	10,719	5,318	3,272	562	1,102	465
Nonctrl. htng., without flue; or not htd.	12,974	6,895	3,440	1,763	853	23	5,902	4,728	1,174	7,072	2,167	2,520	1,524	838	23
Not reported	450	180	148	53	39	30	186	113	73	264	67	97	53	24	23
YEAR BUILT															
1945 or later	4,697	4,001	368	301	27	...	3,017	2,825	192	1,680	1,176	176	301	27	...
1940 to 1944	5,433	2,961	1,079	90	1,090	213	2,063	1,991	72	3,370	970	1,007	90	1,090	213
1939 or earlier	22,762	12,487	6,508	2,358	929	480	8,475	6,753	1,722	14,287	5,734	5,186	1,988	899	480
Not reported	666	325	150	...	164	27	320	296	24	346	29	126	...	164	27
Standard Metropolitan Area of New Orleans, La. — Jefferson, Orleans and St. Bernard Parishes															
All occupied units	190,025	65,185	77,845	21,560	14,820	10,615	73,135	48,575	24,560	116,890	16,610	57,205	18,445	14,150	10,480
HEATING EQUIPMENT															
Central heating	37,832	18,457	12,966	2,724	1,913	1,772	22,177	16,329	5,848	15,655	2,128	7,952	2,092	1,808	1,675
Piped steam or hot water	12,527	3,712	5,162	1,455	778	1,420	4,778	2,930	1,848	7,749	782	3,606	1,202	778	1,381
Warm air furnace	25,305	14,745	7,804	1,269	1,135	352	17,399	13,399	4,000	7,906	1,346	4,346	890	1,030	294
Noncentral heating, with flue	33,127	11,044	12,572	3,188	3,245	3,078	12,646	8,743	3,903	20,481	2,301	9,027	2,893	3,182	3,078
Nonctrl. htng., without flue; or not htd.	115,140	34,258	50,628	15,144	9,480	5,630	36,898	22,665	14,233	78,242	11,593	39,021	13,039	8,998	5,591
Not reported	3,936	1,426	1,686	507	181	136	1,421	840	581	2,515	586	1,210	423	160	136
YEAR BUILT															
1945 or later	25,217	17,790	4,841	957	1,005	624	16,673	14,955	1,718	8,544	2,835	3,419	717	949	624
1940 to 1944	18,114	8,550	3,861	740	1,816	3,147	8,456	7,118	1,338	9,658	1,432	2,603	660	1,816	3,147
1939 or earlier	142,609	37,386	67,607	19,437	11,673	6,506	46,662	25,701	20,961	95,947	11,685	50,137	16,695	11,059	6,371
Not reported	4,089	1,462	1,538	426	325	338	1,348	803	545	2,741	659	1,046	373	325	338
Standard Metropolitan Area of Providence, R.I. — Bristol with parts of Kent, Providence and Washington Counties, also parts of Bristol, Norfolk and Worcester Counties, Mass.															
All occupied units	199,895	69,555	52,975	54,060	17,740	5,565	89,060	58,425	30,635	110,835	11,130	33,895	43,925	16,430	5,455
HEATING EQUIPMENT															
Central heating	115,789	54,641	28,368	21,462	6,765	4,553	68,010	48,592	19,418	47,779	6,049	16,034	15,194	6,010	4,492
Piped steam or hot water	100,159	45,647	25,126	18,586	6,303	4,497	57,583	40,631	16,952	42,576	5,016	14,115	13,338	5,659	4,448
Warm air furnace	15,630	8,994	3,242	2,876	462	56	10,427	7,961	2,466	5,203	1,033	1,919	1,856	351	44
Noncentral heating, with flue	71,071	12,303	21,111	27,814	9,196	647	17,640	8,363	9,277	53,431	3,940	15,371	24,755	8,730	635
Nonctrl. htng., without flue; or not htd.	10,680	1,622	3,072	4,152	1,559	275	2,353	847	1,506	8,327	775	2,261	3,536	1,492	263
Not reported	2,347	990	420	628	219	90	1,053	624	429	1,294	366	228	437	197	66
YEAR BUILT															
1945 or later	13,146	11,111	997	599	137	302	10,912	10,358	554	2,234	753	501	541	137	302
1940 to 1944	6,730	4,133	953	328	247	1,069	4,032	3,864	168	2,698	269	843	270	247	1,069
1939 or earlier	176,564	53,232	50,012	52,395	16,950	3,975	73,030	43,392	29,638	103,534	9,840	31,705	42,434	15,690	3,865
Not reported	3,442	1,074	1,008	734	407	219	1,078	805	273	2,364	269	843	676	357	218
Standard Metropolitan Area of Tampa, Fla. — Hillsborough and Pinellas Counties															
All occupied units	124,935	92,000	14,695	8,520	5,570	4,150	77,005	69,460	7,545	47,930	22,540	9,495	6,905	5,045	3,945
HEATING EQUIPMENT															
Central heating	11,787	8,022	1,031	997	662	1,075	8,029	7,084	945	3,758	938	523	840	568	888
Piped steam or hot water	3,954	1,756	357	506	446	889	1,792	1,421	371	2,162	335	230	467	371	769
Warm air furnace	7,833	6,266	674	491	216	186	6,237	5,663	574	1,596	603	293	373	197	119
Noncentral heating, with flue	55,307	45,630	4,961	2,233	1,074	1,389	39,846	36,545	3,301	15,461	9,105	2,593	1,563	830	1,370
Nonctrl. htng., without flue; or not htd.	55,017	36,229	8,495	5,067	3,726	1,500	27,626	24,447	3,179	27,391	11,782	6,233	4,338	3,338	1,500
Not reported	2,818	2,093	209	222	109	185	1,501	1,379	122	1,317	714	146	163	109	185
YEAR BUILT															
1945 or later	30,843	27,285	2,116	583	270	589	24,453	23,444	1,009	6,390	3,841	1,278	523	200	589
1940 to 1944	11,681	8,752	683	580	899	767	7,599	7,251	348	4,082	1,501	365	550	899	767
1939 or earlier	77,883	52,905	11,386	6,857	4,201	2,534	42,744	36,801	5,943	35,139	16,104	7,486	5,392	3,746	2,411
Not reported	4,526	3,057	509	500	200	260	2,208	1,963	245	2,318	1,094	365	440	200	260

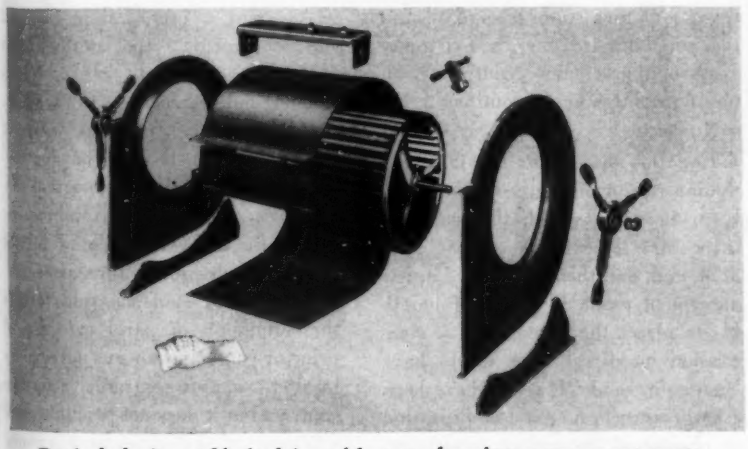


COMPACT • QUIET
DIRECT DRIVE BLOWER



Many Original Equipment Manufacturers *have found that they can save up to* 50% *of their Blower Dollar...*

BY BUILDING THEIR OWN BLOWER ASSEMBLIES*



Exploded view of belt driven blower, showing component parts.

Manufacturers of Original Equipment have found Morrison Blowers and Parts to be unsurpassed in design, construction and performance.

Write for Catalog 603

A sheet for each blower featuring:
Performance curves and tables,
Full dimensional data,
Pulley size and belt length,
Explosion view of component parts

We're going! Are you?
93rd ANNUAL CONVENTION
NATIONAL WARM AIR HEATING & AIR CONDITIONING ASSOCIATION
NOV 28-DEC. 1, 1955 — HOTEL STATLER, N.Y.C.

And be sure to ask about the 50% Saving

MORRISON PRODUCTS INC.
16816 WATERLOO ROAD • CLEVELAND 10, OHIO

YOU AND THE LAW

Can Oral Provisions Alter Written Contract?

Only if the contract has very obviously been *replaced* by a subsequent verbal agreement, most courts agree. For the most part, the law must stand behind the black-and-white agreement and must consider oral committments subject to recall

IN A LAWSUIT by a distributor against a manufacturer of air conditioning equipment the distributor contended that after the execution of a formal written contract for the distribution of these products, the manufacturer had promised orally that the distributor should receive, in addition to the commissions provided by this agreement, a second commission on all direct sales by the manufacturer to the distributor's customers.

Commissions Paid in Past

In support of his claim for these commissions on direct sales the distributor asserted that such commissions had been paid him in the past and failure of the manufacturer to make further payments constituted ground for the lawsuit.

Denying the distributor's right to recover, the court referred to a case involving a similar agreement between tenants and landlord that transportation should be furnished free to schools and transportation systems.

No Obligation Imposed

While such a provision had not been contained in the leases, this transportation service had been furnished by the landlord for nearly 20 years. In its denial of the validity of what was claimed by the tenants to be an oral modification or stipulation for this transportation, the Court of Appeals of that state said:

"In truth, if the lease before us — complete on its face and drafted designedly and explicitly to prevent reliance upon any promise or agreement not included — could be varied and undermined by parol evidence, few written instructions would be safe or secure. From what has been written it follows that the promise to furnish transportation was merely a voluntary concession granted as a favor and thus subject to recall and the supplying of service for many years neither creates a duty nor imposes an obligation to continue doing so in perpetuity."

Had this distributor of air conditioning equipment agreed either orally or in writing with the manufacturer that the written contract was at an end, and then substituted a new agreement made by word of mouth in its place, the provision for commission on direct sales would have been enforceable. It would have been a new contract and not a modification or change of the written agreement.

Circumstances Alter Ruling

A similar situation was involved in a case before the Supreme Court of an eastern state. An agreement had been made on the proposal of a contractor and its acceptance by a realty owner:

"We propose to furnish labor and material for the lathing and plastering according to plans and specifications on the above mentioned building for the sum of $24,867. The above price is a guaranteed contract. Work to be done on cost plus 10 percent overhead and 10 percent profit."

Later, when the conditions surrounding the performance of this work had changed, the owner told the contractor to go ahead with the job on a time and material basis.

When suit was brought later by the contractor against the owner the defense was that the contractor was bound by the original written agreement and that the contractor could not recover the $6530.70 excess he claimed under the oral agreement.

Agreement Replaces Contract

Affirming a judgment in favor of the contractor, the state court said, "The contractor does not claim the original contract was not made or that its meaning was any different than the owner claims. What the contractor claims is that the original contract was abrogated by a subsequent agreement and was replaced by the new and subsequent agreement.

"The parol evidence rule forbids the admission of parol evidence of prior or contemporaneous agreements to alter, vary or contradict a written contract but it does not prohibit parol evidence of an agreement entered into subsequent to the time when the written contract was executed, to alter or abrogate the written contract. We must therefore hold that this evidence was admissible and that it was substantial evidence that the original contract was abandoned and the work done under a different agreement then made."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

He's making it better with Bethcon

He's fitting a side panel into the air-mixing chamber of a large municipal auditorium's air-conditioning system. This chamber, as well as all of the other sheet-metal work in the system, was fabricated of Bethcon continuously galvanized steel sheet.

The reason for selecting Bethcon for this job lies in the superior zinc coating made possible by the continuous process. This process bonds the zinc coating more tightly to the sheet than the ordinary hot-dip method, thus putting an end to peeling or flaking under extreme forming conditions.

The coating is more uniform, too, because continuous galvanizing distributes the zinc more evenly over the entire Bethcon sheet. Heavy beads usually found on the drip ends of galvanized sheets are conspicuously absent on Bethcon. And the distinctive spangles on Bethcon sheets are bright, uniform and attractive in appearance.

Bethcon is made in sheets or coiled strip, 16-gage or lighter. Either plain or copper-bearing steel can be used for the base metal, depending on your requirements. Any Bethlehem district office will gladly furnish whatever additional information you may desire.

BETHLEHEM STEEL COMPANY
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BETHLEHEM STEEL

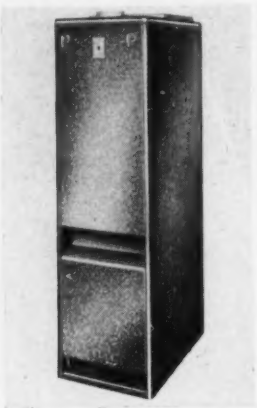
BETHLEHEM STEEL

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the application of these products. For additional product information which is available, see this month's New Literature department

Counterflow Furnaces

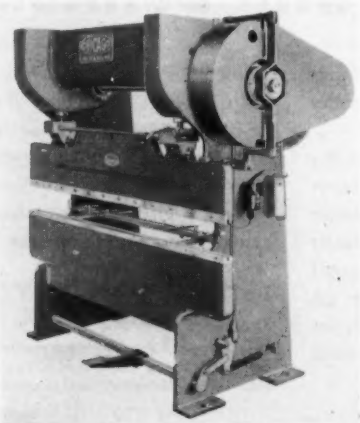
MODEL GCA COUNTERFLOW gas fired furnaces in 75,000, 100,000 and 125,000 Btuh input ratings — American Radiator & Standard Sanitary Corp., 40 W.



40th St., New York 18. Unit is said to be approved for 1 in. clearance installation at sides, zero clearance at rear, and floor installation if sub-base is used. Factory assembled and wired, the furnace is designed for fast installation of add-on cooling unit.

Heavy Duty Press Brakes

SERIES A, B, C AND L all steel press brakes with welded frame and deep section bed and ram of rolled steel plate — Dreis & Krump Mfg. Co., 7400 S. Loomis



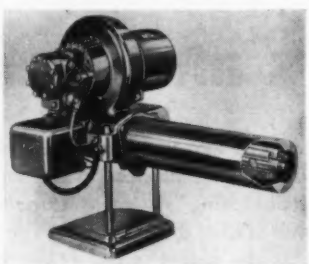
Blvd., Chicago 36. Capacities range from 12 ga. and 48 in. or 14 ga. and 72 in. to ¼ in. and 48 in. or 14 ga. and 144 in.; stroke is 2 in. on series "A" models, 3 in. on all others; ram adjustment is 3 in. on series A and B, 4 in. on series C and L; die space is 7¼ in. on smaller model, 12 in. on others; drive motor is 1½ hp on series A, 3 hp on series B, 5 hp on series C and L. Other features are double end drive from intermediate shaft; one piece main gear and eccentric at each end; enclosed steel gears; twin disc friction clutch and band brake on flywheel shaft; split ram adjustment for tapered work. Clutch can be jogged or slipped to meet operating conditions.

Year 'Round Air Conditioner

MODEL XFC-96-G SINGLE COIL 3 ton year 'round air conditioner, with one gas burner to heat and cool — Servel, Inc., 119 Morton Ave., Evansville 20, Ind. Direct fired unit is said to be about half the size of its predecessor. Servicing requires access on only one side, and the number of major components has been reduced from the number used in previous models, the company reports.

Burner Mounted Primary Control

PRIMARY CONTROL mounted on side of oil burner, designed to eliminate external line voltage wiring — Heil Co., 3000 W. Montana St., Milwaukee 1. Burner-mounted steel jacket houses transformer, relay, safety



timer, ignition timer and other components; sealed heat-sensing element which responds only to radiant heat is located inside the firing tube. System is optional with the company's model CB-1 conversion oil burner rated from 0.65 to 1.65 gph.

Flexible Duct Connections

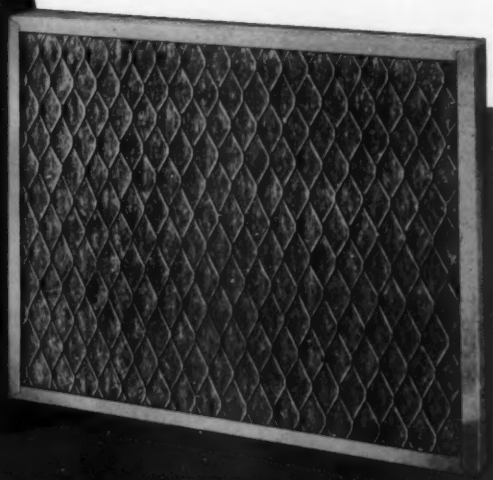
"VENTFAB," "VENTGLAS," AND "VENTBESTOS" waterproof, fire-resistant flexible connections for heating, ventilating, air conditioning and other installations—

JOIN THE "Swing to permanents" FOR GREATER PROFITS

(and more effective filter merchandising!)

A-lum-O-Aire®

America's first and finest practical all-metal, recleanable dry-type filter!



All standard ¾", 1" and 2" sizes or built to order for your special requirements.

Aluminum wool, used as the filter media, is manufactured by Carey to precision standards from special aluminum materials developed expressly for air cleaning. Also available with copper mats and retainers for corrosive atmospheres.

more profit • faster turnover • easier servicing with A-lum-O-Aire®

Here's the filter with the "buy appeal" that makes SALES for you! It's no idle boast we make—when your customers and prospects get the story on the *money-saving, efficiency-improving* features of new A-lum-O-Aire Filters, you're dead-sure of another permanent, profit-making installation.

And easier, faster servicing is in your favor, too! A-lum-O-Aire Filters wash clean in a jiffy with cold water. Nothing to add; no messy oils or adhesives to clean up after the job is finished. Saves valuable time; eliminates material costs.

If you're standing on the sidelines, *RIGHT NOW* is the time to get set for a busy season with the filter that's going ahead—and *STAYING* ahead in the *fast-growing* "change-over" market. There's *MONEY* in smart filter merchandising and it's a natural tie-in with your service operations.

More profit on per-unit sales *plus* an established demand *plus* an attractive pricing structure which helps you *meet* and *beat* competition adds up to high-volume sales. And you're selling the finest filter on the market. It's *safe, clean* and *economical.* Absolutely rustproof and fireproof, it's your best bet for complete customer satisfaction!

NEW MERCHANDISING AIDS

Colorful streamers, folders, envelope stuffers and window or counter displays now ready for your 1955-56 advertising and promotional needs. Complete kit sent with your first order.

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Gentlemen:

Please send me full details and pricing schedules on new A-lum-O-Aire Filters. I want to know how we can improve our filter merchandising activities.

Name_____ Title_____

Company_____

Address_____

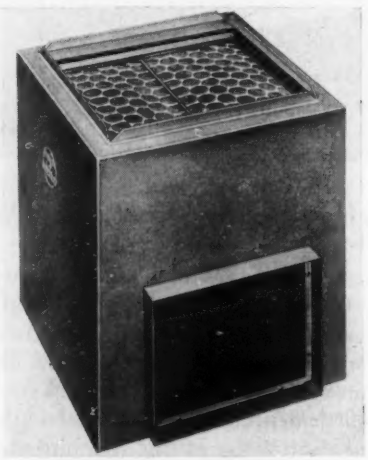
City_____ Zone_____ State_____

Attention Distributors: Exclusive territories in several selected areas still available. Write for details, today!

Ventfabrics, Inc., 640 N. Kedzie Ave., Chicago 12. "Ventfab," for normal ventilating and air conditioning installations, weighs about 20 oz per sq yd, is available in 6, 8, and 10 in. widths. "Ventglas" is designed for installations where high heat and corrosive gases are present. It weighs about 30 oz per sq yd and is in same sizes as "Ventfab." "Ventbestos" is woven asbestos fabric with selvage edges, weighs 28 oz per sq yd, and is designed for flexible connections on residential heating units, ventilating and air conditioning installations. It is in 6 in. wide rolls. All three are available in metal edge series with 24 and 26 gage metal fastened to the fabrics. "Ventfab" is also available with rope sewn in the edges.

Blower-Filter Package

MODEL 309 nine in. furnace blower-filter package designed for converting 60,000 to 100,000 Btuh input gravity furnaces into forced air units — Viking Air Conditioning division, National-U. S. Radiator Corp.,



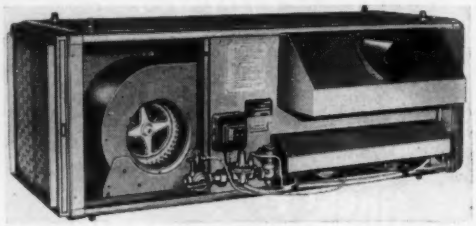
5601 Walworth Ave., Cleveland 2, O. Unit includes blower with 1/6 hp motor and pulley, blower pulley and belt, feet attached to blower housing and 16 × 20 in. disposable filter. Overall dimensions are 26 × 20 × 22 in. Square inlet attaches to round, square or rectangular air returns.

Deep Throat Power Press

"RIGID RIB" MODEL 7 R, 7½ ton power press for medium weight punching needs where deep throat is needed — Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22. Crankshaft is one-piece alloy steel with 1½ in. standard stroke. Flywheel is on double roller bearings; press frame is of multiple rib design. Ram hole is 1 9/16 in. in diameter and 2⅛ in. deep; ram area is 11¼ × 16¼ in. Distance from center of ram to back of press is 12¾ in. Bolster plate is 7½ × 11 × 1 in. Flywheel is fitted with heat treated and precision ground companion drive plate. Unit is a bench model; floor legs are available. Single or double hand or foot controls are available; unit is also inclinable.

Gas Fired Horizontal Furnaces

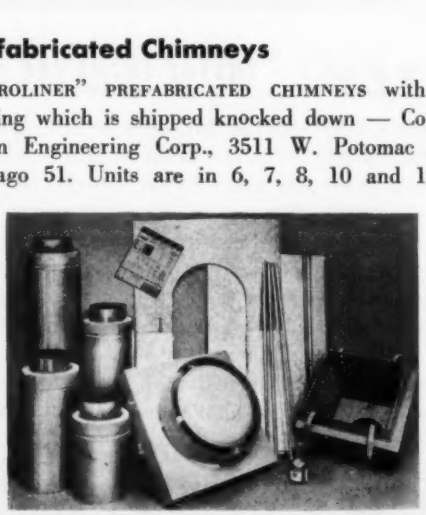
GAS FIRED HORIZONTAL furnaces in capacities of 140,000, 120,000, 100,000 and 80,000 Btu input — Henry Furnace Co., Medina, O. Burner assembly and draft



diverter hood can be installed together or separately on front of the unit; burner can also be installed on the front of the furnace with flue pipe taken off the back or vice versa. Steel heating element is constructed of a series of chambers welded together; gas burners are slotted and die formed from heavy gage sheet steel with welded interlocking joints. Smaller model is 58 × 21 × 18 in.; largest unit is 60 × 24 × 27 in.

Prefabricated Chimneys

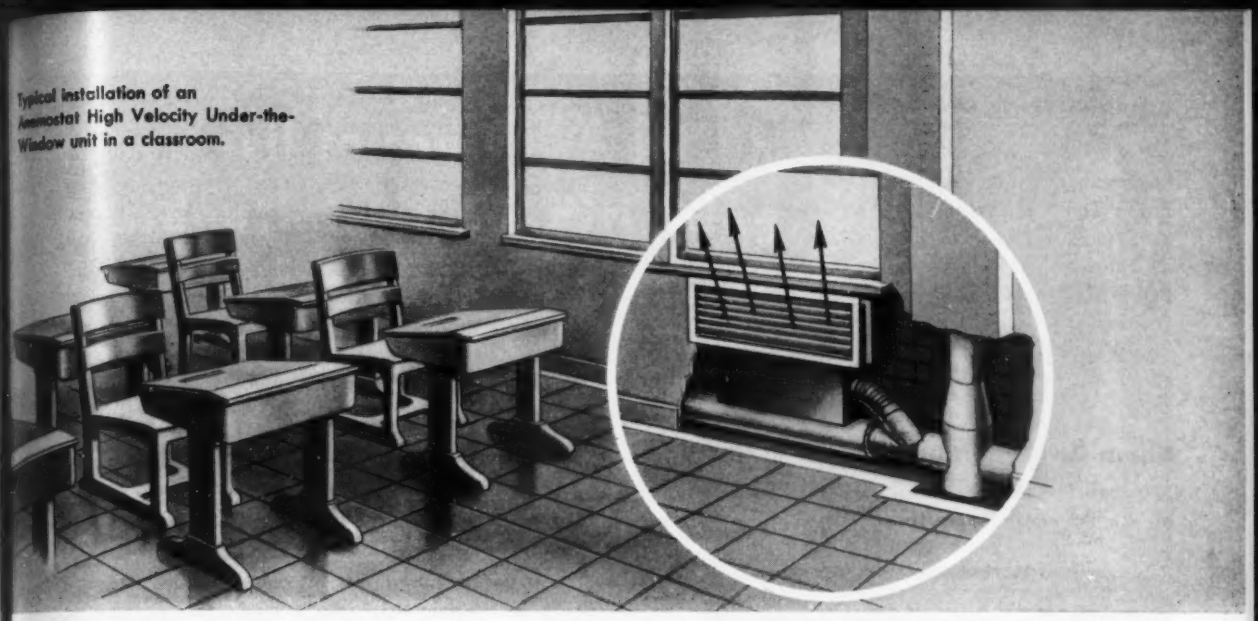
"VITROLINER" PREFABRICATED CHIMNEYS with flue housing which is shipped knocked down — Condensation Engineering Corp., 3511 W. Potomac Ave., Chicago 51. Units are in 6, 7, 8, 10 and 12 in.



sizes; Type E is designed for ranch homes and one story buildings, type L is for two story homes and basement heating installations. Standard flue housing and top in 19 × 19 in. size or "deluxe" housing and top in 19 × 34 in. dimensions are also offered.

Hack Saw Attachment

"SABERSAW" ATTACHMENT for air or electric drills, adapted to a wide selection of special blades for key-



Typical installation of an Anemostat High Velocity Under-the-Window unit in a classroom.

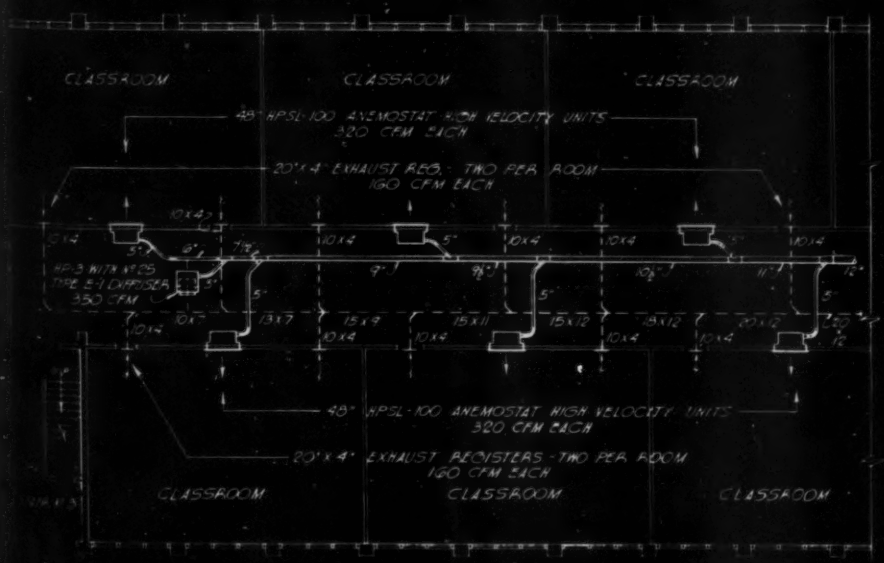
How to deliver high velocity air to schoolrooms

Shown here are two ways of using the Anemostat All-Air High Velocity system of draftless air distribution for heating and ventilating schools. Under-the-Window units (above) are the most practical for colder climates. Corridor distribution (below) is preferable in warmer climates.

Advantages:

- All-Air High Velocity units require smaller than conventional ducts, thus save space and money.
- All-Air HV units can be used for individual or zone control, in single or dual duct installation.
- Since air is supplied from the main equipment room, there is no need to break through the outside of the building for prime air make-up. This eliminates grilles, dampers, possibility of leaks.
- The Anemostat All-Air HV system can be simply installed by the sheet metal trades. No supply or return pipes are required. Units are quiet, need a minimum of maintenance from custodians.

For latest data on All-Air High Velocity units, write on your business letterhead for new Selection Manual 50 to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.

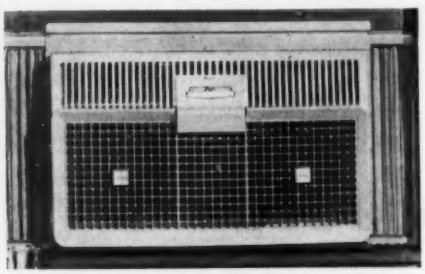

CLASSROOM
CLASSROOM
CLASSROOM
48" APSL-100 ANEMOSTAT HIGH VELOCITY UNITS 320 CFM EACH
20"x4" EXHAUST REG. - TWO PER ROOM 160 CFM EACH
48" APSL-100 ANEMOSTAT HIGH VELOCITY UNITS 320 CFM EACH
20"x4" EXHAUST REGISTERS - TWO PER ROOM 160 CFM EACH
CLASSROOM
CLASSROOM
CLASSROOM

Diagrammatic layout shows corridor distribution of high velocity air for wing of school.

hole and scroll cutting and hack sawing — Thor Power Tool Co., Aurora, Ill. Attachment weighs 3 lb, 3 oz, measures 7¼ in. long and 2⅝ in. in diameter at widest point. Unit has no gears, operating with a ball bearing reciprocator which whips the blades back and forth. Rifle sight pointer and steady rest rocker are designed to permit accurate cuts. Unit fits any air or electric drill of ¼ in. or more capacity.

Room Air Conditioners

"DELUXE," "CUSTOM," AND "IMPERIAL" lines of room air conditioners ranging from ½ to 2 hp — Mitchell



Mfg. Co., 2525 N. Clybourn Ave., Chicago. "Deluxe" series is in units of ½, ¾, 1 and 1½ hp sizes. All deluxe models are designed to fit a 27 in. window. Two-knob control provides four comfort levels. Louvered adjustable front panels are featured; remote wall thermostat is available. "Custom" line, in ¾ and 1 hp units, has seven comfort levels. Choice of resistant or reverse-cycle heating unit is offered. Other features are flush mounting, three-row condenser coil, blower fan said to move 325 cfm, and two speed, permanently lubricated and sealed motors. "Imperial" models are in ¾, 1, 1½ and 2 hp units which fit windows from 30 to 44 in. wide, or 60 in. wide with "Expando-mount" installation feature. Normal capacity of 800 cfm can be increased to 1000 cfm for quick cooling, the company states.

Power Hand Saw Attachment

THREE-IN-ONE power saw attachment which converts a ¼ in. electric drill into a hack saw, jig saw or coping saw—Aladdin Mfg. Co., 3125 Harrison, Kansas City, Mo. Set screw locks the blade for safety. Up to 9/16 in. is provided for chip clearance, and a cam reduces the saw speed to half the drill speed. Movable handle protects the blade. Unit weighs 11 oz.

Color Anodized Aluminum Sheets

COLOR ANODIZED aluminum sheet, tube and fasteners for indoor or outdoor use, in blue, green, yellow, gray,

Char-Gale

AROUND THE CLOCK DELIVERIES
Bring you prefabricated ducts and fittings...
when you want them at prices you want to pay

Backed by 300,000 Sq. Ft. of Productive Capacity. From the huge Char-Gale factory, you can be sure of adequate supplies of the following items:

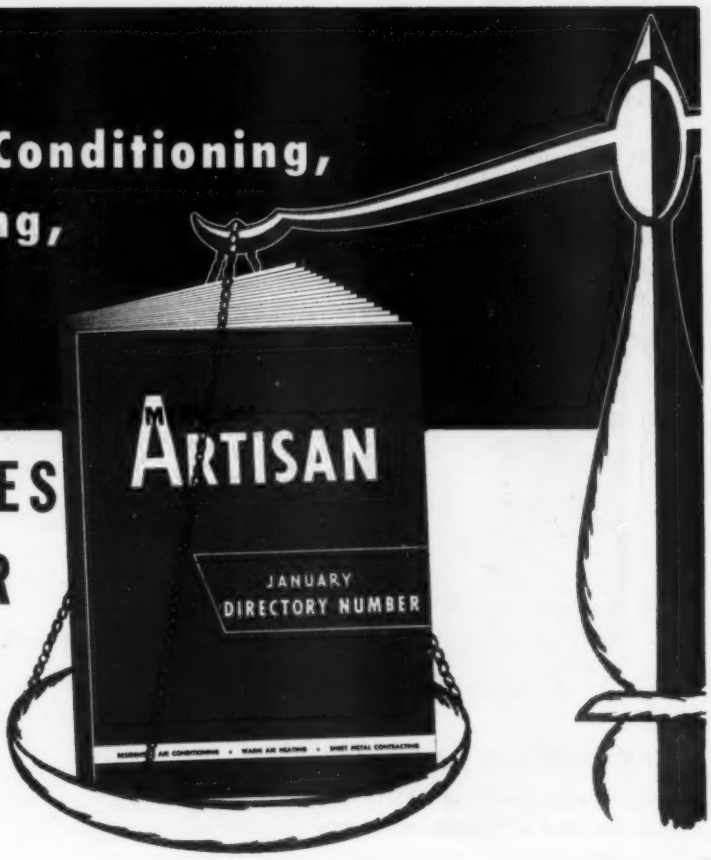
Aluminum Fittings • Aluminum Pipe and Elbows • Aluminum Sheets • Galvanized Fittings • Galvanized Pipe and Elbows • Galvanized Sheets • Complete Small Pipe Systems; both Aluminum and Galvanized • Seamed Heat Tubing • Button Lock Heat Tubing • Humidifiers • Rain Goods • Registers—Complete Line, both Perimeter and Conventional, including Floor Diffusers • Baseboard Diffusers in 2, 4 and 8 foot lengths.

Rapid, nation-wide delivery service by Char-Gale's own fleet of trucks means prompt movement of Char-Gale products direct to you. It reduces your inventories to save you money and space. And you benefit from ordering mixed truckloads.

Ask about the extra-capacity Gale-Aire 4½" System.

Char-Gale MANUFACTURING COMPANY
ANOKA, MINNESOTA

If you sell to the Residential Air Conditioning, Warm Air Heating, Sheet Metal Market...



TIP THE SCALES in YOUR FAVOR throughout 1956

Use this field's Accepted Buyers' Guide

By no other means can you accomplish so much at so little cost.

Promoting your products in American Artisan's January Directory Number is a BASIC job — a fact recognized by well over 200 advertisers who take advantage of this opportunity each year.

Dealers, contractors, wholesalers, and manufacturers constantly need up-to-date information on sources of supply. In the most complete form available, they find such data in our Directory Number:

- An alphabetical listing of all products the field uses.
- Names and addresses of the manufacturers.
- All known trade names.
- A guide to the products advertised in this issue and the manufacturers' names.

Here's information your customers and prospects will be referring to throughout 1956 when buying decisions are made. Without question, your product story in this issue will have LASTING sales power.

In addition, as a regular January issue (not a 13th or premium cost number), there will be normal editorial content assuring immediate cover-to-cover attention.

It all adds up to an unequalled opportunity. In American Artisan you have the book that reaches the greatest concentration of buying power — the more progressive dealers and contractors who handle 80% of the available business . . . the book that delivers the only fully paid (ABC) circulation in the field . . . the book that excels in editorial content . . . the book that leads in advertising volume . . . the book that best covers Residential Air Conditioning's acknowledged outlet — the Warm Air-Sheet Metal Dealer.

And in American Artisan's **January Directory Number** you have the added value of an issue designed to promote sales all during the year. Take sufficient space, perhaps a spread, an insert, or multiple pages, to present complete buying information. Regular space rates apply.

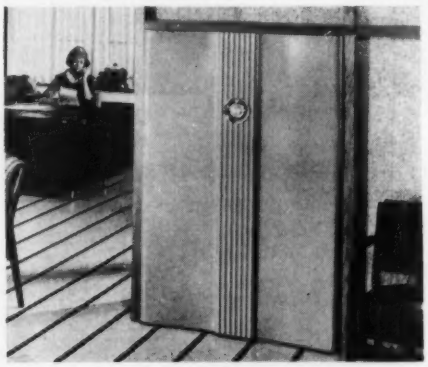
KENEY PUBLISHING — **6 N. Michigan, Chicago**

ABC AIR CONDITIONING HEADQUARTERS ABP

NEW YORK: 1734 Grand Central Terminal CLEVELAND: 737 National City Bank Bldg. LOS ANGELES: 672 S. Lafayette Park Place

equipment developments *(Continued)*

brown, gold and black metallic finishes—Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19. Clear oxide coating is artificially built up and colored with dye materials which are "sealed" in to become part of the metal. Decorative color finishes are designed for interiors; architectural finishes are for external use. Decorative finishes are also available in coiled sheet.



Air Conditioner for Stores

"Self-Contained Weathermaker" air conditioning units designed for central duct system air conditioning of small stores, offices and other commercial applications—Carrier Corp., 300 S. Geddes St., Syracuse 1, N.Y. Water cooled units are in 2, 3 and 5 hp sizes. Featured are horizontal and vertical fan discharge; prewired electrical control center; bottom air return; "Humitrol" unit to control dehumidification; elimination of front return air opening; and gold plated control dials. Return air enters at the bottom at front, rear and sides; base is designed to reduce amount of return air ductwork required and to save installation space; front panel is solid with no openings for return air grilles, etc. Chassis is welded steel, casing and compressor area are insulated with glass fiber blankets. Fan discharge can be changed for installations with low headroom. Separate coil sections are staggered in the air path. Multiple condensate drains are designed to remove moisture rapidly from coil sections. Other features are rust resistant condensate collector; high and low pressure cutout; upright condenser; and built-in discharge muffler.

Vibration Pads

"Shear-Flex" neoprene vibration isolation pads with alternate high and low ribs designed to provide adequate noise deflections—Vibration Mountings, Inc., 76-17 Queens Blvd., Elmhurst, L.I., N.Y. Pad has a maximum capacity of 60 lb per sq in.; measurements are 18 × 18 × 3/8 in. Light loads are supported on

SEE IT SELL IT SERVICE IT PROFIT!

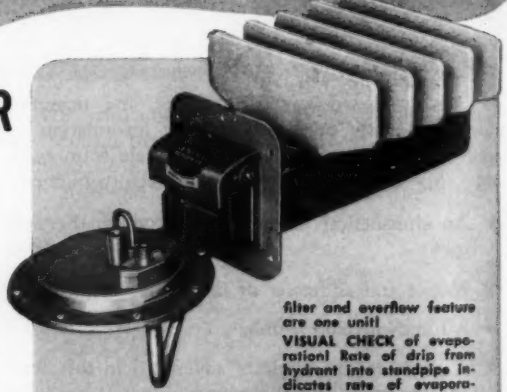
IT'S BRAND NEW!

GENERAL "200" HUMIDIFIER

Unit Type For Warm Air Furnaces

Easiest of all humidifiers to install — just paste paper template to sheet metal, cut hole indicated on template, and slip the assembled unit into the hole. Two wing nuts allow leveling in a minute. Exclusive HYDRO-FLOW REGULATOR controls water flow. Will not lime, stick, or cause trouble in any way. Porosil evaporating plates provide better capillary action for greater evaporation. Built-in strainer filters out any dirt particles.

This new addition to the General line enables you to fit the humidifier to the job — gives your customer a choice of the Model 250 which humidifies without the use of evaporator plates or the one-piece Model 200. No other humidifier line gives you this choice. Use General Humidifiers every time for a "long time" satisfied customer.



SIMPLEST of them all to install — No fiddling adjustments!

BUILT-IN diaphragm controlled nylon valve, water filter and overflow feature are one unit!

VISUAL CHECK of evaporation! Rate of drip from hydrant into standpipe indicates rate of evaporation!

STANDPIPE acts as overflow! No extra lines to install, no tapping into sewers!

Write for further information, prices, and the name of your nearest jobber.

You Sell With Assurance When You Sell *General*

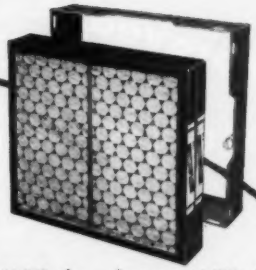
ANOTHER OUTSTANDING PRODUCT OF

GENERAL FILTERS, INC.

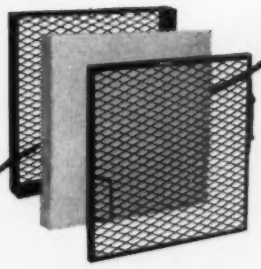
43800 Grand River Avenue
Novi, Michigan

IN CANADA: Canadian General Filters, Ltd., 39 Crockford Blvd., Scarborough (Toronto 16), Ontario

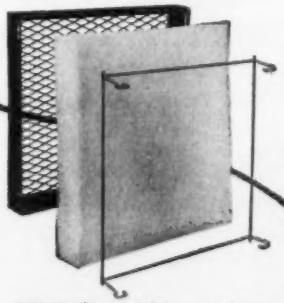
We TAILOR glass fibers for air cleaning



AMER-glas — features AMER-glas media in 1" or 2" thicknesses contained in fibreboard casing between two perforated grilles. Metal frame units available in range of sizes and depths, permitting filter cells to be installed in series.



RENU-VENT — an efficient filter using AMER-glas pads 3½" in depth which greatly increase unit's dust holding capacity without increasing the initial resistance proportionately.



RENU-glas — a filter consisting of metal frame and 2" AMER-glas pad. A spring retainer, holding media in frame, eliminates cost of casing to enclose pad. Range of sizes permits bank-assembly to fully utilize any given space.

AMER-glas is "made-to-order" for AAF Replaceable Media Air Filters

Stretching the glass fibers is just one of many carefully planned steps in the production of AMER-glas. The sum total of these efforts—a filtering media, in the form of thick, resilient, self-supporting pads, offering the advantages of high cleaning efficiency, minimum air resistance, low cost, ease of handling and absence of prickly fibers.

If it's a job for replaceable media air filters, AAF offers you a range of types and sizes featuring today's most versatile and economical cleaning media—AMER-glas. Write for Bulletin 216.

AAF herman nelson

American Air Filter

COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 355 Central Avenue, Louisville 8, Kentucky

you offer more value with

improved Skuttle

standard home humidifier

Model 600 B
Vapoglas
Humidifier

THESE Skuttle FEATURES MEAN SALES

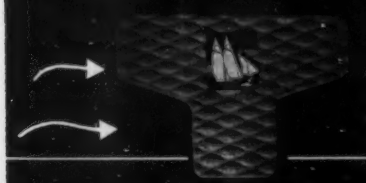
FLEXIBLE, ALL-PURPOSE: For use with sloping curved bonnets or straight plenums in gravity or forced air heating plants.

QUICK INSTALLATION: Only one hole in plenum needed. Installation averages under 30 minutes.

BUILT-IN QUALITY: Acid and alkali resisting glass lined pan and float chamber. Leakproof glass float. Nickel and chrome plating used on other vital parts. Corrosion resistant.

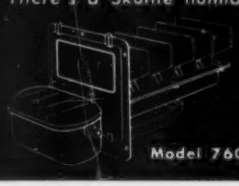
LESS AIR STREAM RESISTANCE: Patented Vapoglas plates insure more moisture output. More evaporating area per dollar.

For further information, write to:



Skuttle
MANUFACTURING COMPANY
Milford, Michigan

There's a Skuttle humidifier for every type heating plant



Model 760

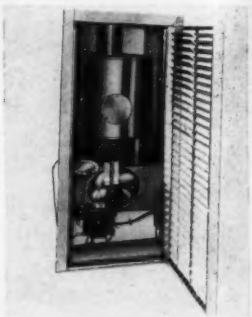
Model 450

equipment developments

high ribs only; heavier loads are supported by the entire ribbed surface.

Recessed Wall Heater

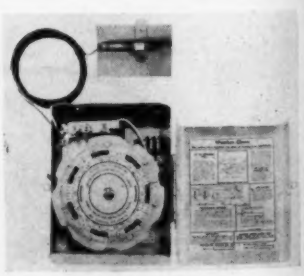
OIL FIRED recessed furnace with 58,000 Btu output with pressurized pot type burner and welded steel heat exchanger—U.S. Machine division, Stewart-Warner Corp., 1826



Diversey Pkwy., Chicago 14. Unit is in three models, with manual control, electric wall thermostat or modulating thermostat control. Secondary radiator is said to increase radiation surface to more than 3300 sq in and reduce stack temperatures. Modulating thermostat operates from temperature bulb in return air stream. Circulator-booster fan is synchronized with the oil flow rate. Other features are hinged and louvered access door, insulated grille frame and side grilles and safety limit switch.

Weather Actuated Switch

"WEATHER-CHRON" weather actuated time switch for day-night or seven day programming of heating systems —Automatic Devices Co., Inc., Weather Controls division, 714 Hill-



grove Ave., Western Springs, Ill. Unit stops all heat input to the building

INGERSOLL CONDITIONED AIR DIVISION
Borg-Warner Corporation
Dept. AA, 760 E. Vine St., Kalamazoo, Mich.

Rush AIRLINE details for: ☐Franchise Distributor ☐Dealer ☐Have your representative call on us

Name_____

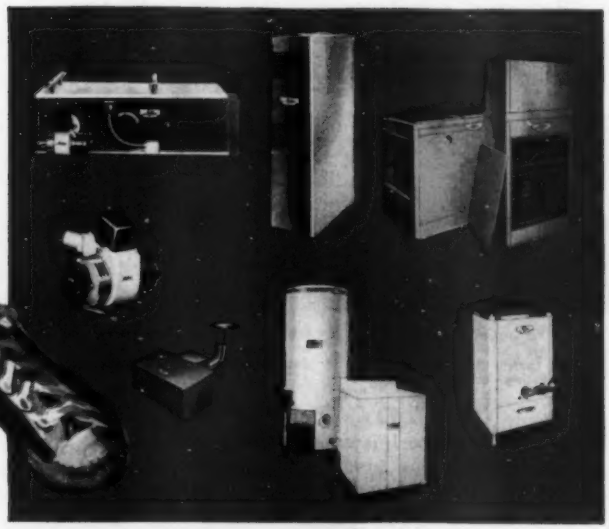
Company_____

Address_____

City_____ State_____

POP SAYS THIS COUPON CHANGED MY LIFE!

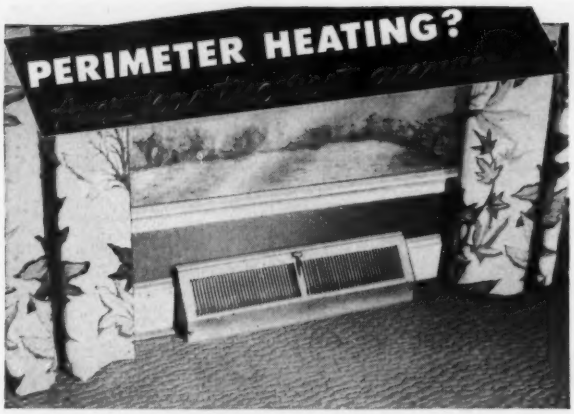
Could be. Pop says I've got a brighter future now, 'cause he climbed on the Airline bandwagon—but I feel the same. Parents are funny, you know. It's really Pop who's changed. Smiles more. Talks a leg off Mom about "hot" merchandise, full line, franchise protection and other things I don't understand. Seems a lot busier too, but when he does come home he's more fun. Mom says those Airline people helped Pop over the rough spots. Showed him how to build up his business. Don't ask me how. All I know is that Pop sent that Airline coupon in—and he's been different ever since.



Go and Grow with **Airline**

NORGE HEAT

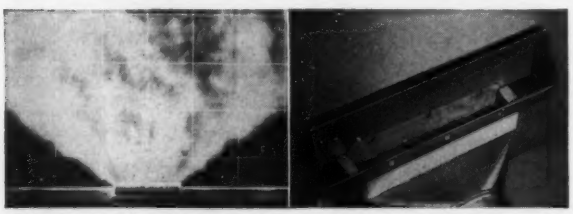
PRODUCTS OF BW BORG-WARNER



Auer "Perfusaire"
TRADE-MARK

● The new *low-cost* baseboard decorator style perimeter diffuser illustrated above is only 18" long, but with a capacity of 4 to 8 foot units. Designed for easy installation in or against plastered walls, inside or outside the baseboard and in new or old construction. It has a pre-cut hole for 2¼ x 12" duct openings and knock-outs to accommodate 2¼ x 14" where needed. It is the answer to uneven wall installations—so difficult with long diffusers.

"Perfusaire" distributes air evenly over a wide fan-shaped area, and is equipped with a built-in damper for system balancing. It is an ideal unit for combination heating and cooling systems.



Auer "Perfusaire" test photo showing huge fan-shaped air pattern, ideal for heating and combination heating and cooling systems.

Clip fasteners permit a means of attaching 2¼ x 12" or 2¼ x 14" duct without cutting the diffuser.

FLOOR TYPE

For floor type perimeter and intricate "narrow-space" installations, Auer can fill your needs from its complete "DRP" line of registers in standard sizes.

Auer DRP 2¼ x 14" floor perimeter diffuser.

Auer DRP floor perimeter diffuser (4 and 6" widths, 10, 12 and 14" lengths).

Write for full details on low cost "Perfusaire" and other perimeter diffusers. Ask for Bulletin P-54.

Auer REGISTERS and GRILLES

THE AUER REGISTER CO.

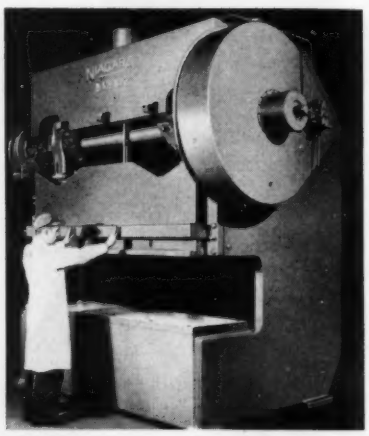
6602 Clement Ave. • Cleveland 5, Ohio

equipment developments *(Continued)*

when outdoor temperature rises above pre-selected minimum. Night setback is automatically eliminated when outside temperature drops below an adjustable low level. Seven day feature adjusts the hours of heating to needs of building occupancy for each day of the week, allowing earlier shutoff times for weekends if desired. Switch can be used in any space heating control circuit, the company reports.

Double Crank Presses

SERIES B AND BI redesigned line of gap frame double crank presses with standard capacities of 45 to 200



tons in upright (B) and open back inclinable (BI) models — Niagara Machine Tool Works, 637-697 Northland Ave., Buffalo 11, N. Y. Steel box type slide is contained within the gibbing; two connections are designed to resist tilting under off-center loading. Adjustable air counterbalance is said to provide smooth press action.

Close Clearance Furnaces

"SPECIALINE" GAS FIRED furnaces in 90,000 and 105,000 Btuh input, designed for close clearance applications — Armstrong Furnace Co., 851 W. Third Ave., Columbus 8. Single port burner is said to handle fuel variations without becoming carbonized or requiring temporary readjustment of primary air. All steel heat exchanger has round body and wrap-around single weld radiator. Stainless steel ribbon anchors flame to the burner port to prevent combustion roar, according to the manufacturer.

Fireplace Unit with Damper

"THREE STAR" fireplace unit with pressure seal damper designed to prevent escape of cooled air through the fireplace in air conditioned homes—Heatilator,

These typical properties show why Crucible 430 stainless was a good choice for the Murray worm drive clamp.

Tensile Strength — a. Room Temperature — 75,000 psi. b. At 1700F — 3500 psi

Yield Strength — 40,000 psi

Elongation — 30%

Hardness — 160 BHN

Endurance Limit — 40,000 psi

Creep Strength — Stress for 1% elongation in 10,000 hours at 1300F-1300 psi

Resistance to Scaling — Suitable for continuous service to 1600F.

the finest products wear a STAINLESS *label...*

When you label a product *stainless steel* it means lasting dependability . . . good looks . . . and resistance to wear or corrosion.

That's why the Murray Corporation, Towson, Maryland, chose Crucible stainless for the worm drive hose clamps shown above. These clamps need the high strength, wear and corrosion resistance that only *stainless steel* can provide.

Stainless has other advantages, too. Its high creep and fatigue strength . . . heat resistance . . . and excellent workability may be just what you're looking for.

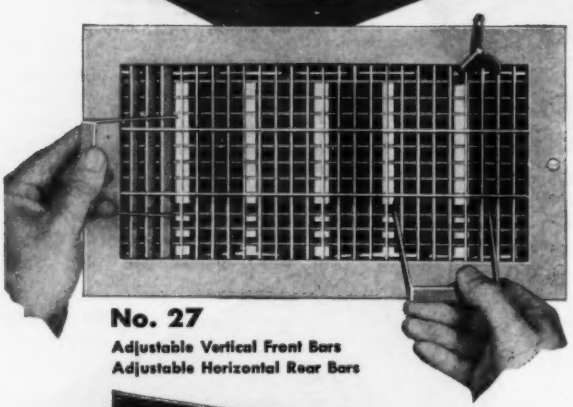
At Crucible stainless steels are *prescription-made* by steelmen with over a half century of experience in *special purpose* steelmaking. They'll welcome the opportunity to help you make the most profitable use of stainless for your products. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

INDEPENDENT

"Fabrikated"



No. 27
Adjustable Vertical Front Bars
Adjustable Horizontal Rear Bars

Rear View
Showing Volume
Control Dampers

Write for Bulletin
No. 54-A which gives
complete details and sizes
up to 48"x 24"

Always Leading—
Always Progressing

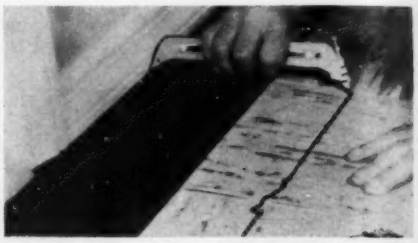
THE INDEPENDENT
REGISTER CO.
3747 E. 93rd STREET · CLEVELAND, OHIO

equipment developments (Continued)

Inc., Syracuse 5, N.Y. Damper also prevents loss of heated air into the flue when fireplace is not operating and stops chimney down drafts, the company states. Dome design is adapted to any size or shape flue and helps reduce sharp angles in the flue.

Contour Scriber

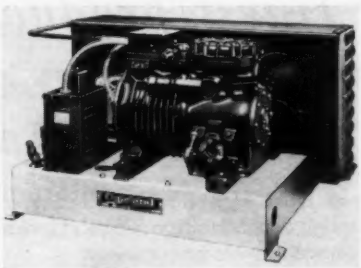
CONTOUR SCRIBER designed to produce accurate fitting of sheet metal — Merchandising & Mfg. Associates,



Inc., 53 N. Duke St., Lancaster, Pa. Tool marks circles or scrolls from 1 to 25 in. diameter and follows irregular contours and surfaces, for accurate fit around pipes, cabinets and corners on floors, walls and ceilings, according to the manufacturer.

Air Cooled Condensing Units

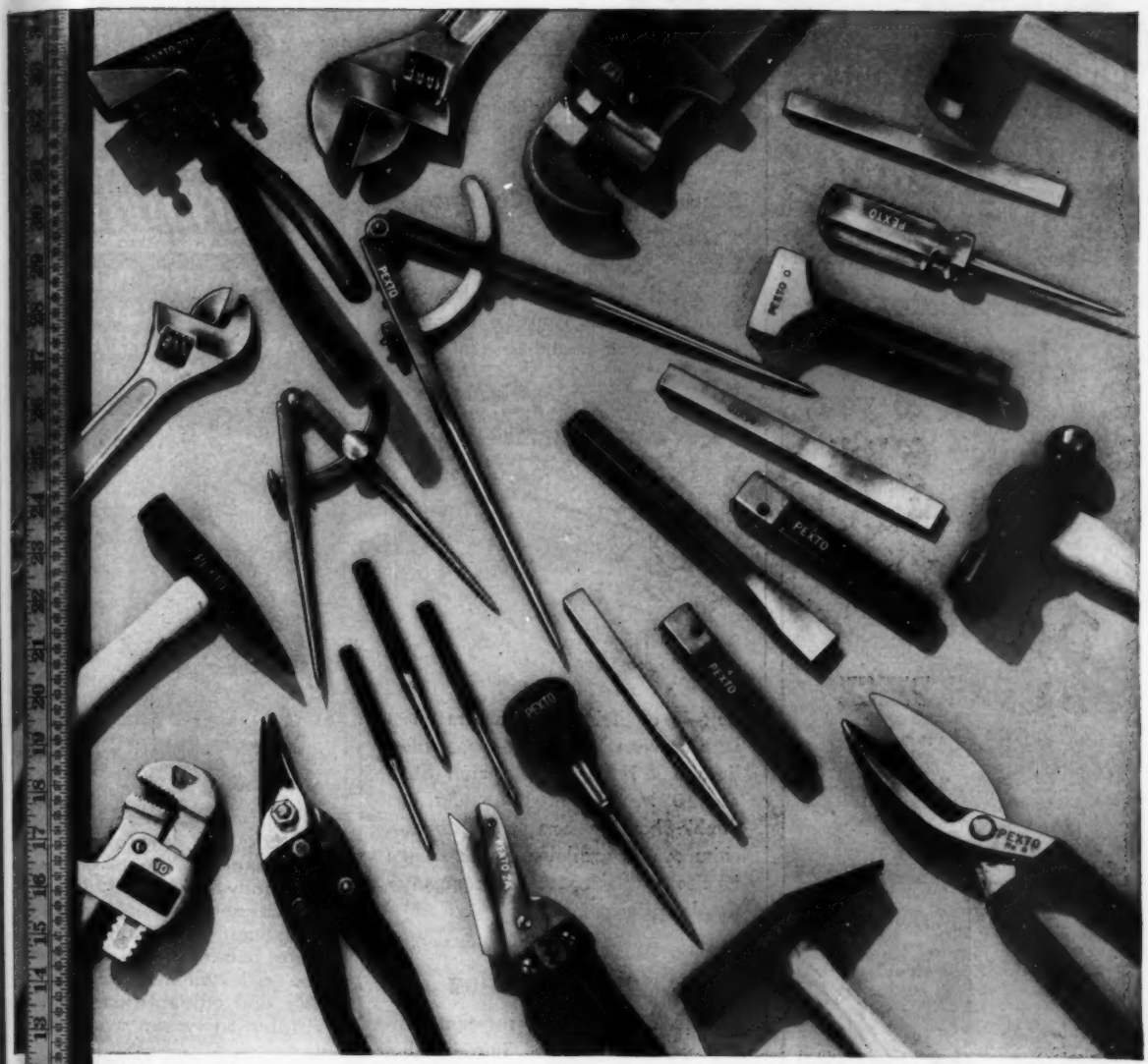
THREE AIR COOLED condensing units with suction cooled motor compressors in 2, 3 and 5 hp sizes — Copeland Refrigeration Corp., Sidney, O. Standard



unit consists of an oversize finned-tube condenser, relay box, twin fans and receiver mounted on steel base. Overall dimensions for 2 and 3 hp units are 40¼ in. long × 29¼ in. deep × 19¼ in. (2 hp) or 21¼ (3 hp) high. Five hp models are 45 × 33⅛ × 27⅞ in.

Floor Furnaces

LINE OF gas fired floor furnaces rated at 25,000 to 57,000 Btu — D. P. Ran Appliance Corp., 1202 N. Alameda, Compton, Calif. Inner and outer casings are 24 gage galvanized steel; extra heating elements are hand welded. Unit has a safety lock plate



A GOOD RULE *to follow in picking hand tools*

To the sheet metal worker, the "PEXTO" name on any hand tool means quality assured. Manufactured in the century-old tradition of unexcelled craftsmanship and skill that has made the "PEXTO" name a symbol of reliability in American industry since 1785, these hand tools have earned first preference by the all-important man on the job.

For your sheet metal Tools, a good rule to follow, always, is ...PEXTO

See your Distributor

The Peck, Stow & Wilcox Co., Southington, Conn., U. S. A.

Big Sales Possibilities *and* Extra Profit – in REPLACEMENT BUSINESS

Mr. Dealer, Here is an answer to your Pulley & Belt Problems

Zatko

ONE PIECE Stamped Steel Pulleys

ONE PIECE
—for Greater Strength
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Zatko Quality Pulleys matched with Zatko Quality Belts offer a lot of extra PROFIT for YOU.

SEE YOUR WHOLESALER

or write for particulars of the unusual sales opportunities.

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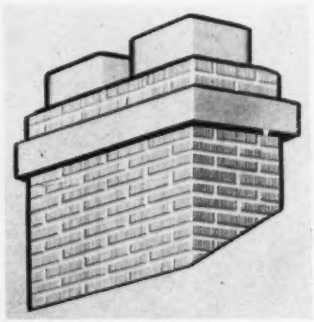
Replacement Parts Inc.
22408 Lake Shore Blvd. Euclid 23, Ohio

equipment developments

which prevents turning on the furnace when the pilot is not on.

Simulated Brick Chimney

METAL CHIMNEY TOP housing which has the appearance of wire-cut brick —Majestic Co., Inc., 733 Erie St., Huntington, Ind. Housing has an extension which resembles a flue tile;



unit is of striated aluminum sheet with depressed mortar joints, shadow lines and brick-colored paint. Sizes are 18 × 18 and 18 × 36 in.; double housing complete with two chimneys is available. Brick design is also available for the company's fireplace line.

Pump Housing Coating

"PUMP-AID" corrosion resistant coating which is injected into housing cavity of seasonally operated pumps on cooling towers, evaporative condensers and air conditioning water recirculating equipment — Garman Co., Inc., 1253 Grover, St. Louis 23, Mo. Designed to prevent corrosion and sticking during down periods, coating is injected under pressure through the drain hole after draining the pump. Coating is in aerosol canister using fluorinated hydrocarbon type propellant. According to the manufacturer it will not freeze or evaporate, adheres to surfaces permanently until flushed off, and is non-toxic.

Hand Seamer

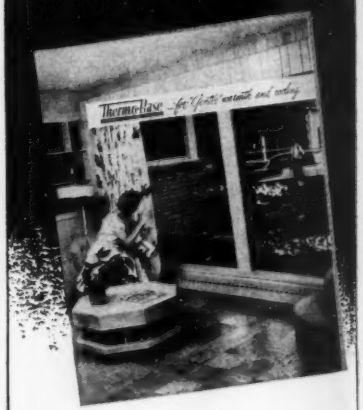
HAND SEAMER with compound leverage and forged steel jaws — Malco

YOU OWE IT TO YOURSELF AND YOUR BUSINESS TO READ THIS

Thermo-Base

BASEBOARD • HEATING • COOLING

CATALOG BEFORE YOU INSTALL ANOTHER HEATING SYSTEM!



This beautiful new four-color catalog explains the revolutionary, nationally advertised, Thermo-Base system of heating and air conditioning. It will help you get **more** heating jobs and enable you to install the most comfortable and efficient baseboard air distribution system available.

The catalog also contains the exclusive Thermo-Base method of sizing both heating and air conditioning jobs and can save you **hundreds of hours of estimating time yearly.**

CLIP and MAIL THIS COUPON NOW!

Thermo-Base Div., GERWIN INDUSTRIES, INC.
Dept. 19 Michigan City, Indiana

Please Rush me your new Catalog!

NAME _____

COMPANY _____

STREET _____

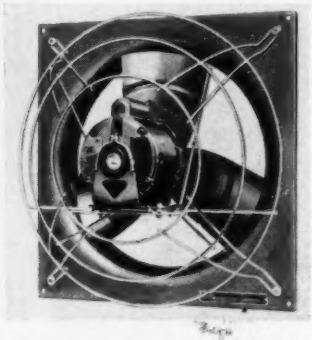
CITY _____

STATE _____

Products, 405 E. 48th St., Minneapolis, Minn. Equipped with spring return action, hand stop to protect worker's fingers and formed steel handles, the device is said to flatten a seam inside a 3¼ in. opening. Overall length is 8¼ in., weight is 1⅛ lb; jaws are 3¼ in. wide, 1⅛ in. deep.

Attic Ventilating Fans

MODEL G "VENTURA" propeller fans with two speed or constant speed direct drive enclosed motors — American Blower Corp., Detroit 32. Capacities range



from 535 to 9600 cfm. Square mounting panel, polished wire fan guard and baked enamel finish are standard equipment.

Sound Level Meter

REVISED MODEL 410-C sound level meter with separate output stage for driving sound analyzers, peak noise indicators, graphic level recorders and other accessory

equipment — Herman Hosmer Scott, Inc., 385 Putnam Ave., Cambridge 39, Mass. Unit is used for measuring noise, sound and vibration from equipment such as blowers, ventilating fans and other machinery. Portable instrument has a sound level range 34 to 140 decibels above the standard ASA reference level of 0.0002 dynes per sq centimeter, the company reports. Meter uses hearing aid batteries with an operating life of about 50 hr.

Coal Fired Furnace

MODEL B-8 COAL fired furnace with heat output of 75,000 Btu—Eddy Stoker Corp., North Wolf Rd., Wheeling, Ill. Stoker switch serves as high limit,

Only WALKER Has It!

Automatic Draft Control with

Full Protection at All Vital Points!

Pat. Pending

Royal Purple Model

Think of it! A draft control that's absolutely impregnable to soot, carbon, corrosion and dust . . . one that will give years of accurate, trouble-free service in spite of the most adverse operating conditions! The new Walker ROYAL PURPLE model is the first—and only—draft control with positive, all-point protection. These revolutionary improvements can't be copied or duplicated — they're exclusively Walker because of pending patents.

The Royal Purple — Hit of the Philadelphia Show

THE INSIDE STORY

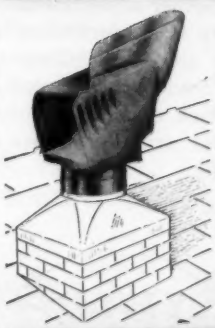
The weight adjustment assembly on the ROYAL PURPLE model is sealed in by a protective housing which keeps mechanism absolutely free from dirt deposits. Unretouched photo at right shows back of vane and housing after more than a year's service. Cutaway shows spotless condition of sealed-in weight adjustment assembly. Clean, corrosion-free operating parts assure ease of adjustment at any time.

This front view of an actual installation shows location of pivot pins which control vane movement. Notice how they are located on front face of damper and set back, away from edge. Box-type hinges completely seal delicate knife-edge pivots, keeping them clean and sensitive even after years and years of service.

For complete details on this sensational new development in draft control, see your jobber or write Walker Manufacturing and Sales Corporation.

Another Outstanding Walker Development

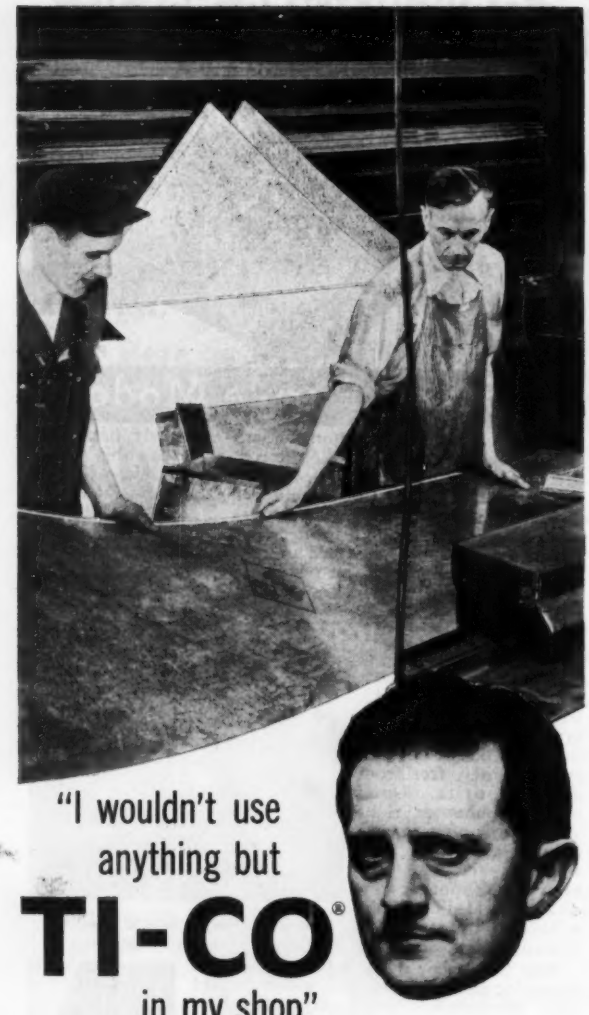
VENTURI-TOP CHIMNEY CAP



Ideal for both heating (gas, oil or coal) and ventilating applications. Directional vane keeps throat of vent facing into wind for maximum draft control. Sloping-throat design prevents back drafts and actually increases draft effectiveness by constricting it as it passes over chimney opening. Unit rotates on a friction-free, hardened-steel ball bearing. Pivot is also of hardened steel to assure lifetime operation. Ring guide bearing in pivot post keeps cap absolutely perpendicular—doesn't sag or lean. Streamlined design is both attractive and functional — a combination which makes it a favorite with today's architects.

Walker Manufacturing and Sales Corp.

1730 Penn St. St. Joseph, Mo.



"I wouldn't use anything but **TI-CO**® in my shop,"

Says **Mr. Earl Rocky,** Supt. of **O. A. Wendt Co.,** Chicago "We have been using close to 500 tons of Inland TI-CO per year for the past several years and I have yet to have a sheet flake on me. Even on the lockseamer, and we make our seams especially tight, TI-CO performs beautifully. Ask any of the boys in my shop and they'll tell you the same thing."

Mr. Rocky, like a great many other sheet metal contractors, has learned that there is a tremendous difference between TI-CO and just any conventional galvanized sheet. Inland TI-CO is made by a special continuous galvanizing process which eliminates the brittle iron-zinc layer that causes ordinary "pot-dipped" galvanized coatings to flake.

Ask your dealer for Inland TI-CO
Look for this stencil
on all your galvanized sheets

Write Dick Killelea, Dept. 253-A
INLAND STEEL COMPANY
38 South Dearborn Street • Chicago 3, Illinois
Sales Offices: Chicago • Milwaukee • St. Paul • Davenport
St. Louis • Kansas City • Indianapolis • Detroit • New York

equipment developments (Continued)

out-fire control and hold-fire control; a 14 in. removable circulating fan has three speeds, 900, 1150 and 1525 cfm. Combustion chamber and heat exchanger are stainless steel; hopper is pressurized and coated; motor is rubber mounted. Coal feed is 8 lb per hr. Cabinet is cold rolled steel with baked enamel finish; dimensions are 40 × 38½ × 24½ in.

Recessed Wall Furnace

MODEL OW55 RECESSED wall furnace designed to operate on no. 1 fuel oil and rated at 58,000 Btu output — Perfection Industries division, Hupp Corp., 7609 Platt Ave., Cleveland 4, O. Flush mounted furnace has vaporizing burner and "Midget" pilot, constant level fuel valve with high temperature limit control, 10 in. propeller fan with aluminum blades. Casing dimensions are 52 × 21 × 24¾ in. Divided front grille is 53 × 25 × ⅞ in. Direct access to burner bowl is featured.

Space Deodorizer

SPACE DEODORANT made of non-toxic elements of plant life — Aireactor Corp., 22 E. 40th St., New York 16, N. Y. Non-flammable solution is said to leave no odor of its own, but when vaporized, destroys other offensive odors either indoors or outdoors. Special spraying machinery regulates and diffuses vapors from the solution.

Cube Design for Air Conditioners

CUBE DESIGN for 2, 3 and 5 hp water cooled and air cooled air conditioning equipment and for all furnace models — Lipman division, Yates-American Machine Co., Beloit, Wis. All cubes in the 2 and 3 hp

For fast cuts and easy handling—

Hand shears can't compete with

UNISHEAR

The best man in your shop couldn't match a pair of hand shears against the speed and accuracy of Stanley's U216 Portable Electric Unishear.

First, he'd be beaten in length of cut. In one minute, Unishear U216 slices through 20 feet of 14-gauge hot rolled steel; other models cut from 18 to 6 gauge.

And he'd take a licking on accuracy, too. Unishear's improved blade action cuts straight lines, curves, angles and notches smoother, more accurately than any hand method. The operator finds it easy to handle — self-feeding jaws do the cutting.

To lower production costs, save fabricating time and make cutting jobs easier, get a Stanley Unishear for your shop. Choose from six portable and three stationary models. For more information write Stanley Electric Tools, 57N Myrtle Street, New Britain, Conn.

STANLEY Electric Tools

A Division of The Stanley Works

TOOLS • ELECTRIC TOOLS • HARDWARE • STEEL • STEEL STRAPPING

Switch to - -

LINCOLN

Gas-Fired and Oil-Fired Furnaces and Air Conditioners

COMPLETE LINE — size ranges from 75,000 to 180,000 B. T. U. output at bonnet.

COMPLETE PACKAGE UNITS — factory assembled and tested — ready to install.

10 YEAR WARRANTY — on both the combustion chamber and heat exchanger.

MAXIMUM HEAT TRANSFER — assured by high efficiency 12 gauge steel heat exchanger.

FULLY U/L APPROVED — and acceptable by both F.H.A. and V.A.

COMPETITIVELY PRICED — every unit priced to meet today's competitive market.

Exclusive distributor and dealer franchises are available in certain desirable areas. Inquiries are invited.

WRITE FOR FULL INFORMATION

LINCOLN FURNACE Co., Inc.

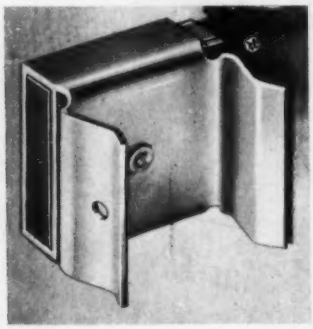
MANUFACTURERS OF GAS & OIL FURNACES AIR CONDITIONERS

230 Goffle Road • Hawthorne, N. J.

classification are of the same dimensions, with blower, evaporator and compressor cubes. Remote air cooled section is a complete condensing unit, the company reports.

Magnetic Mounting Clips

"MAGNECLIPS" MAGNETIZED CLIPS designed to hold portable draft gages to any steel surface — F. W. Dwyer Mfg. Co., P. O. Box 373, Michigan City, Ind.



Device attaches to gage and clings to steel surface where it can be adjusted to level setting. Clips are included as standard equipment on the company's vertical and inclined portable manometers of solid plastic construction as well as certain other manometers. On plastic gages, the unit slides on by hand pressure, is secured to the gage by spring action.

Aluminum Water Heater

"ALUMILUX" ALL-ALUMINUM hot water heater said to produce water temperatures up to 180 F — Clayton & Lambert Mfg. Co., Louisville division, 1707 Dixie Hwy., Louisville 10, Ky. Developed in cooperation with Reynolds Metals Co., the unit is said to permit intensity of flame and resist chipping, cracking and rusting without anodic protection.

Vent Device for Pressure Regulator

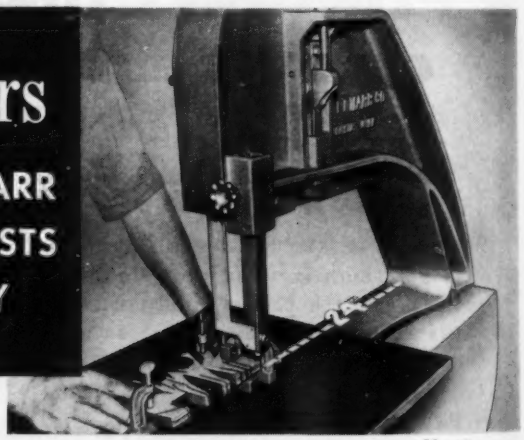
"SOFT LIGHTING" VENT device which screws into vent outlet on gas appliance pressure regulators and is designed to prevent flame "roll-over" which causes pilot outage and flame flash — Penn Controls Inc., Goshen, Ind. Consisting of machined aluminum body, seat insert and nylon ball, the unit slows down delivery of gas when the main valve opens, the company reports.

Stainless Steel Hinges

LINE OF STAINLESS steel continuous, piano type, butt, fixed pin and loose pin hinges — Star Stainless Screw

Save Costly Labor Hours

AMAZINGLY LOW-PRICED BETT-MARR BAND SAWS CUT PRODUCTION COSTS —PAY FOR THEMSELVES QUICKLY



MODEL 24S— 3 wheel band saw with 24" throat. Ht., 61", depth, 44", 22" wide, table 20" x22".

MODEL 14 SM —2 wheel band saw with 13½" throat. Ht., 62", depth, 34", 22" wide, table 20" x22".

Both Bett-Marr Models are especially designed for stacked sheet metal cutting. They have quickly adjustable blade speeds from 100 to 3000 FPM for cutting metal, wood or plastic without blade chatter. Perfect blade control assures smooth radius and straight line cuts. Blade cannot slip off wheel in operation. Cuts iron, bronze, copper, steel castings and forgings, wood, plastics, and stainless steel.

Rugged 3-Wheel Saw Has 24" Throat —Cuts 50 to 70 Stacked Sheets

Model 24S Bett-Marr will make center cuts on sheets up to 48 inches wide. It's big enough to do most any job—small enough to fit most any space—and costs much less than any comparable saw.

Low cost—2-Wheel Saw Out-performs Saws Costing 6 Times As Much.

Model 14SM Bett-Marr has a 13½" throat and will do everything its big brother will do, except accommodate the larger sheets. A Bett-Marr can help you produce ductwork pieces 6 to 12 times faster than by hand.

WRITE FOR INFORMATION OR ASK YOUR DISTRIBUTOR

BETT-MARR MFG. CO.

HOPKINS, MINNESOTA

We have a house to put in order...

WE HAVE A HOUSE to put in order . . . and it's the house where America lives.

Of our country's many million homes, more than 1 out of every 10 are out-and-out slums. Nearly one-half of all American dwellings are in poor to "fair" condition, and urgently need basic repairs.

Something *must* be done—both to correct the slums of today and *prevent* the slums of tomorrow.

How do slums start? Usually just one house starts to slide downhill and soon a whole block changes. Pride is lost. Other houses are neglected, decay spreads.

So the 20 million homes in need of basic repair and improvements deserve equal attention. The time to stop the spreading blight of slums is *before it starts.*

What's your stake in stopping slums?

If you think your town is different, just look around you . . . If you think slums only affect persons who live in them, think again.

Slums raise taxes and lower property values of the whole town. They raise rates of crime, delinquency and disease. *Everyone* has a real stake in stopping slums. And *that includes you as a businessman.*

Your firm is certainly dependent on the welfare of the community where you do business. But it's more than good business—it's good citizenship to take part in efforts aimed at civic improvements. It's the *responsibility* of every business.

What can your firm do? The answer to America's housing problems starts with individuals. But to roll back slums is such a big job it's going to take more than individual effort. It will need the cooperation of your business and many others.

Some slums should be torn down and a fresh start made. Others can be remodeled and made to conform to better living standards. So it is up to you to support every sound program which seeks adequate housing for all our people.

New help is now available

There is a new national, non-profit organization called A.C.T.I.O.N.—The American Council To Improve Our Neighborhoods—which is designed to help all individuals or groups interested in putting America's house in order.

Send for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It lists booklets, research, check-lists, and other material which can help you. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

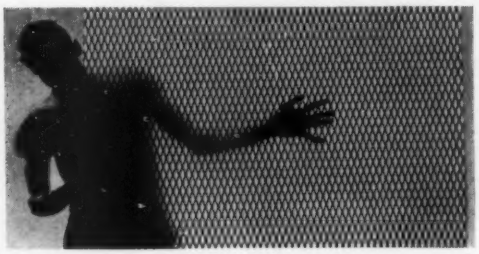
American Council To Improve Our Neighborhoods

equipment developments *(Continued)*

Co., 699 Union Blvd., Paterson 2, N. J. Continuous or piano type hinges are in 1 1/16 to 3 in. open widths and in gages from 0.037 to 0.125; standard length is 72 in. Pins are 3/32 to ¼ in., joints are ⅝ to 2 in. Butt hinges are 1½ to 4 in. in width and in length, and in gages from 0.050 to 0.125. Pin diameters are ⅛ to ¼ in. Fixed and loose pin hinges with welded fixed pin ground at ends are 2 × 1 in.

Security Panel for Skylight

GLASS FIBER PANEL for glazing security windows, small skylights, truck side panels, housing dangerous



equipment and other screening applications — Resolite Corp., Zelienople, Pa. Sheet of expanded metal lath is embedded in a layer of 3 oz glass fiber mat impregnated with resin. Standard sheet is in translucent resin in 8 ft lengths and 1, 2, 3 or 4 ft widths.

Chimney Cleanout Door

MODEL 80-R CARBON STEEL cleanout door in 8 in. square size designed to cover chimney access hole 7½ in. square — Majestic Co., Inc., 733 Erie St., Huntington, Ind. Door frame is over 2½ in. wide with die-flanged hinges. Access door, permanently attached to the frame with an integral hinge, is recessed and has a latch which serves as an opening handle and as a lock. Integral mortar locks anchor the frame in place.

Oil Fired Water Heater

MODEL 30T COPPER LINED oil fired water heater in 30 gal capacity—Quiet Automatic Burner Corp., 33-35 Bloomfield Ave., Newark 4, N.J. Outside casing is heavy steel; recovery rate is 196 at 60 F rise, 148 at 80 F rise and 118 at 100 F rise, according to the company. Burner uses no. 2 oil; nozzle is rated at 1 gph.

Central System Air Conditioning Unit

"FLEXI-COOL" air conditioner in 2, 3, 5 and 7½ hp sizes for limited space installations — Worthington

EMPIRE TURBINES FOR POSITIVE VENTILATION

The Largest Selling Turbine Ventilator In The New York Area For Over A Decade

SOLD THRU LEADING WHOLESALERS
SEE YOUR JOBBER

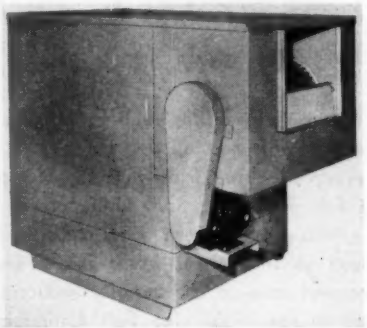
"AS IT ROTATES - IT VENTILATES"

EMPIRE VENTILATION EQUIPMENT CO.
35-39 VERNON BLVD
Long Island City 6, N.Y.

Corp., Harrison, N. J. Cooling cycle section alone may be added to existing furnace or assembled unit can be installed remotely with ductwork extended to the area to be cooled; unit may also be connected to an air cooled condenser. Unit may be suspended or floor mounted, in vertical or horizontal position. Dimensions of the 7½ hp unit are 39 × 43 × 26 in.; other units are 24 × 38 × 21 in.

Air Cooled Condensers, Cooling Towers

REMOTE AIR COOLED condensers in 2 to 20 ton sizes — Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22. Units are slow speed and belt driven; fans are 4 blade with deep pitch. Also available are centrifugal



blower cooling towers in 5 to 15 ton sizes, with wetted deck surface protected against rotting or fungus attack and cabinet protected with hydraulically applied corrosion-resistant coatings.

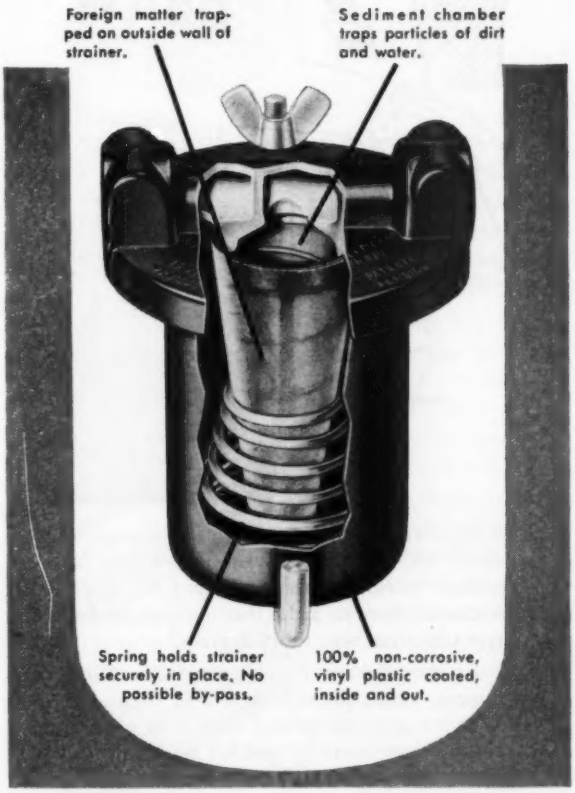
Forced Air Wall Furnace

"FA PANELRAY" forced air wall furnace rated at 65,000 Btu which can be installed between 16 or 24 in. studs — Day & Night division, Carrier Corp., 700 Royal Oaks Dr., Monrovia, Calif. Unit is 95 in. high, 14 in. wide, 9½ in. deep; one, two or three heat outlets are available. Unit is thermostatically controlled, with 24 volt diaphragm automatic gas valve. Heating element is protected against rust or burnout with a ceramic coating. Furnace operates with natural, manufactured or L-P gases.

Cold Chemical Coating for Aluminum

"ALUMBLACK" COLD CHEMICAL finisher for aluminum coating designed to give a soft or high gloss finish— Birchwood Chemical Co., 4500 W. 44th St., Minneapolis, Minn. Said to dry in one minute, the formula can be dipped, sprayed or applied with rag or brush. Rubbing produces glossy finish. Designed for small parts finishing and touch up as well as other applications, the formula features metal penetration for mini-

How and why A-P TRAP-IT ends fuel oil problems


Foreign matter trapped on outside wall of strainer.
Sediment chamber traps particles of dirt and water.
Spring holds strainer securely in place. No possible by-pass.
100% non-corrosive, vinyl plastic coated, inside and out.

FOR ALL GRAVITY-TYPE and POWER BURNERS
using up to 5 gph of No. 1 or 2½ gph of No. 2 fuel oil

IMMEDIATELY upon installation, Trap-It begins to "clean up" fuel oil by trapping all sludge deposits, dirt and foreign particles on its 100-mesh strainer. No worry about moisture in the oil either. Ends flame failure, sluggish operation, erratic flows or leakage due to dirty oil.

Make Model 243 SY Trap-It a *key* installation on every space heater or central heating job.

Cleans in 3 steps

1. Remove two wing nuts.
2. Hold filter element under hot water for a few minutes to remove dirt and impurities.
3. Empty water and heavy residue out of cup — and reassemble.

Order from your distributor, or write:

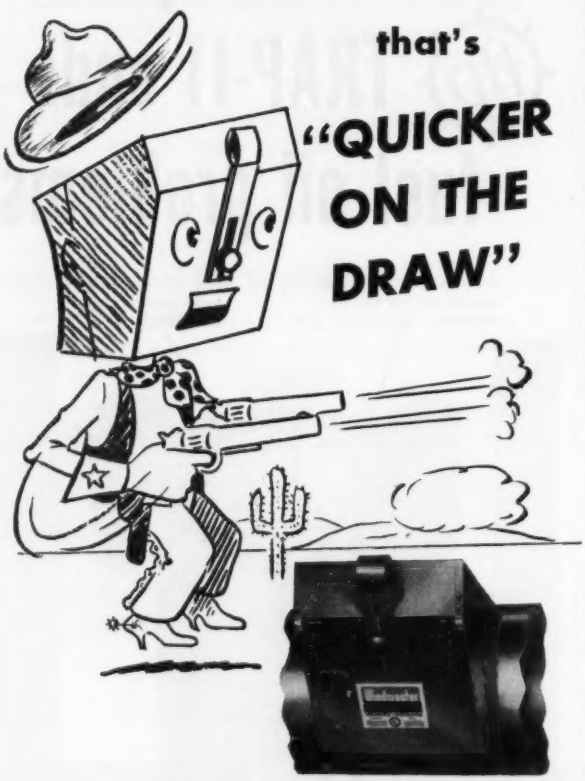
DEPENDABLE Controls
For Air • Liquids • Gases • Refrigerants

A-P CONTROLS CORPORATION
2452 N. 32nd Street, MILWAUKEE 45, Wisconsin
COOKSVILLE, Ontario NIJMEGEN, Holland
For Export: 13 E. 40th Street, New York 16, N. Y., U.S.A.

The Modern Draft Control

that's

"QUICKER ON THE DRAW"



Trigger-ready for the slightest change in draft, the Windmaster vane is mounted for action! Starting at the important 45° angle, it doesn't have to make that nervous, ineffective trip from zero to 45 degrees.

At the slightest movement of the Windmaster vane, prompt relief is provided. Whether the split-second need is to open or close, Windmaster is *"quicker on the draw."* This can mean the difference between an efficient, smooth running installation and one that has the j-i-t-t-e-r-s.

You benefit by these Windmaster Features

- 45° Vane—no nervousness —faster response
- Large Square Vane—more effective area
- Permanently Silent Non-Rusting Nylon Bearings
- Sloping Pipe Installations
- Calibrated Counterweight
- E-Z 'Dapter — quick, easy installation

It pays to say "Windmaster" to your jobber

Windmaster® Corporation

43 Vine St. **Columbus 15, Ohio**

equipment developments *(Continued)*

mum tolerance deviation, and anti-corrosive properties, the company reports.

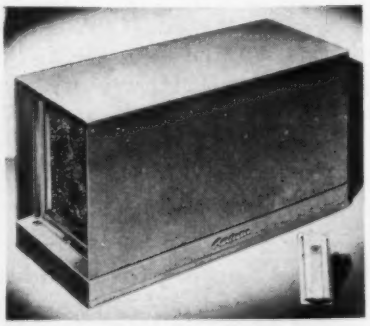
Fuel Oil Filter

FUEL OIL FILTER with zinc cast, cylindrically shaped filter bowl and top — Auto-Flo Corp., 14590 Schaefer, Detroit 27. One-piece filter bowl is designed with an

annular section and strong bolt spud cast in the rib-reinforced inside bottom. Top has inlet and outlet ports to divert oil through the filtering element. Cartridge of felt discs and fine mesh screen cylinder core of galvanized 40 mesh wire cloth is installed in the bowl so the screen fits over the bolt spud in the recessed area of the annular section and the felt presses on top of the ring wall. Cadmium plated steel retainer bolt passes through cored hole in the cover and screws into bolt spud in the bowl. Oil coming through the inlet port must pass through felt discs and wire screen before flowing to the outlet port.

Electric Humidifiers

"APRILAIRE AUTOMATIC-ELECTRIC" humidifiers for forced air furnaces — Research Products Corp., 1015



E. Washington Ave., Madison 10, Wis. Portable model requires no installation and is designed for rented homes or apartments, offices or other nonpermanent applications. Universal model is installed between joists in basement or crawl space, with ductwork to either floor or wall mounted intake and exhaust

registers. All models are controlled humidistat; water is passed through evaporating pad and introduced into the building as a vapor. Both models have independent heat source to evaporate the water.

Furnace Humidifier

"AQUAMAGIC 5600" furnace humidifier with "leak-proof" glass pan—Viking Air Conditioning division, National-U.S. Radiator Corp., 5601 Walworth Ave., Cleveland 2, O. Borosilicate glass pan is resistant to

heat, alkali and acid. Unit is said to fit any duct or plenum up to 8½ in. without restricting warm air flow, yet will accommodate 10 evaporator plates for furnaces up to 200,000 Btuh. When pan contains sufficient supply of water it tips forward against spring-loaded lever which lifts brass rod to close the water intake valve. Five evaporator plates provide over 274 sq in. of evaporator surface, according to the company.

Gas Fired Unit Heaters

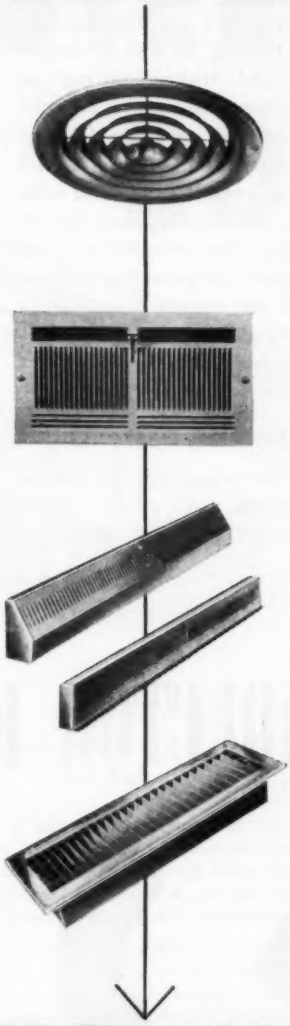
SIX MODELS of gas unit heaters ranging from 50,000 to 225,000 Btu input — Temco, Inc., 4104 Park Ave., Nashville 9, Tenn. Heaters are suspended from two hangers; two smaller units are 23 in. high. The heaters have dynamically balanced fan with overlapping blade powered by slow speed resilient-mounted motor. Heat exchangers are finished in porcelain enamel.

Miniature Float Valve

MODEL RM-2 MINIATURE float valve for smaller water controlling requirements such as cooling towers or evaporative coolers and condensers—Robert Mfg. Co., 9035 Venice Blvd., Los Angeles 34, Calif. Unit is said to maintain liquid levels with positive shutoff. Capacity is 1 1/3 gpm at 50 psi inlet pressure. Unit is available with copper or "styrofoam" float in models RM-2C and RM-2S, respectively.

ceiling... floor
...or anywhere between

Better Diffusion



Standard Registers *shape* comfort, *aim* it, *diffuse* it evenly

Ceiling to floor, there's a Standard Register or Diffuser for a better job of shaping, aiming or spreading conditioned air. For ceiling outlets, two Standard Ceiling Diffusers—with flush or extended louvers—send warm or cool air to every corner evenly. (Also dampers and installation rings.) And for positive control of warmed air from the floor, there's the Standard Perimeter Floor Register with exclusive dialamatic control. Select the exact diffuser, register or grille for virtually any air-directing job from the full Standard line.

MAKE REGISTER, DIFFUSER SPECIFYING EASIER

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Please send me your catalog No. 54, on Registers and Grilles.

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Standard STAMPING & PERFORATING COMPANY
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new literature . . .

Fabrication of Stainless Steel

INFORMATION IS GIVEN on forming, cutting, welding and finishing stainless steel in *The Fabricator's Handbook* (164 pages) — Crucible Steel Co. of America, Oliver Bldg., Pittsburgh 30. The section on forming includes data on brake, roll and die forming, also roll bending and stretch forming as well as annealing. Shearing, blanking and friction sawing are described in the cutting section. The chapters on welding present data on fusion and resistance welding, scale removal, soldering, brazing and riveting as well as an explanation of how to prepare surfaces for welding. Finishing operations described include flexible wheel polishing and buffing. Also included are brief descriptions of several methods of protecting polished surfaces. Tolerances, gages and weights are given for sheets, bars, angles and tubing. Requests for the handbook should be sent on company letterheads.

Sizing Evaporative Cooling Systems

AIR COOLING CALCULATOR for evaporative air coolers was developed to simplify the sizes of air cooling systems ($1.00) — International Metal Products Co., 500 S. 15th St., P. O. Box 1712, Phoenix, Ariz. The reverse side of the calculator explains how to determine duct dimensions.

Horizontal Furnaces

INFORMATION ON GAS FIRED horizontal furnaces for home and commercial installations is presented in catalog insert No. 107 — The Henry Furnace Co., Medina, O. Features of the furnace include compact design, welded steel heating element, slide-out filter frame and slot type gas burner which can be installed at front or back of the furnace. Photographs show components as well as the complete unit. Also included are line drawings showing the unit installed in basements, utility rooms, crawl spaces, etc.

Conversion Oil Burner

BULLETIN AH-55520 covers Model CB-1 conversion oil burner offering as optional equipment a burner-mounted primary control designed to eliminate the need for external line voltage wiring — The Heil Co., 3000 W. Montana St., Milwaukee 1. The transformer, relay, safety timer, ignition timer and other standard primary components are contained in a steel jacket mounted on the side of the burner, while the heat sensing element is hermetically sealed and located in-

CONDUCTOR ELBOWS AND SHOES

- ALL SIZES
- ALL ANGLES
- ALL GAUGES
- ALL METALS

"Tapered to Fit"
"Galvanized after Formed"

THE CINCINNATI ELBOW CO.

4730 Madison Rd. Cincinnati 27, Ohio

SEE YOUR JOBBER

side of the firing tube. The burner, rated at 0.65 to 1.65 gph. is also available with stack-mounted primary control.

Installing Mineral Wool Pneumatically

How to install mineral wool pneumatically in houses and other buildings is the subject of research bulletin No. 29 — National Mineral Wool Association, 2906 Americas Bldg., Rockefeller Center, New York 20. Step-by-step installation procedures are given, illustrated with photographs and drawings, for insulating attics, roofs, sidewalls, basements, crawl spaces and other areas.

Thermostatic Expansion Valves

Bulletin gives specifications for Model 218 TXV thermostatic expansion valve featuring disc and seat construction — A-P Controls Corp., 2450 N. 32nd St., Milwaukee 45. The valve seat and ports leading to the seat are machined from ductile iron castings. With the valve in the open position, refrigerant passes through four openings in the casting and past the seat and disc. A second bulletin covers Model 65 condenser water regulating valve available in 1 and 1¼ in. sizes. Both bulletins are illustrated with external and cutaway views.

Exhaust Fans

Construction features of Model K ventura fans for heavy duty exhaust applications are covered in Bulletin No. 6514 — American Blower Corp., Detroit 32. Performance data such as delivery ratings at various static pressures, fan speed, motor hp, quietness rating and maximum net weight are given for 45 direct drive fan units available. Installation drawings are included which give basic dimensions for each size.

Fiber Duct for Perimeter Heating

Foil lined fiber duct designed for warm air perimeter heating in basementless homes is described in a four page circular — International Oil Burner Co., 3800 Park Ave., St. Louis 10. The duct is available with inside diameters of 4, 5, 6, 7 and 8 in. and in 12, 14, 16, 18 and 20 ft lengths. Installation details are given and a diagram shows how the ducts are used in a typical system.

Electric Heating Systems

Circular discusses electric heating systems for homes — Electromode Corp., 45 Crouch St., Rochester 3, N. Y. Designed for consumer reading, the folder emphasizes such features as compact design, ease of oper-

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Rolled Steel Products will save you up to 20% on ALL steel costs!

No matter what size or gauge steel you use, save up to 20% on all steel costs by calling ROLLED STEEL PRODUCTS. It doesn't matter where you are or how fast you need it, we'll get it to you and *unconditionally guarantee your satisfaction.*

ROLLED STEEL PRODUCTS is an established firm with a customer list of 4,020. The majority of our customers order from us *regularly* to keep their prices down . . to beat their competition on finished product costs . . to make a bigger margin of profit on every item.

The next time you need steel, call us collect at ORchard 3-7400, Skokie, Illinois. Let us prove to you that you can save on steel.

Another steel-buy typical of ROLLED STEEL'S VALUES:
40,000 pounds, 24 ga. galvanized 28" x 96"
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Write today for spec current price list of additional exceptional buys. Write Dept. AA.

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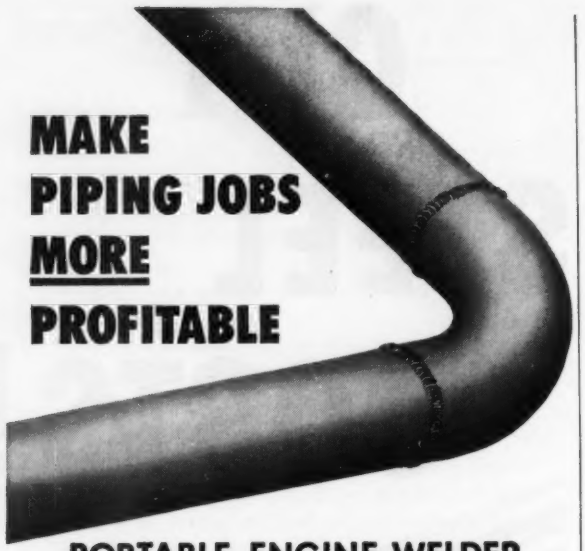

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PORTABLE ENGINE WELDER

eliminates costly long cables and hook-up time

Best arc for every position—flat, vertical, overhead is instantly selected on "Shield-Arc's" Dual Control.

Peak performance at lowest cost—engine idling device saves fuel, cuts down on maintenance.

Compact, easy to move around—mounted on rubber-tired undercarriage.

Information on Complete Line—Lincoln gasoline and diesel-engine driven welders described in Bulletin 1337. Write for it.

THE LINCOLN ELECTRIC COMPANY

Dept. 3906 • Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

new literature *(Continued)*

ation and cleanliness. Featured is a baseboard unit with capacities ranging from 600 to 1200 watts, available in 32, 48 and 64 in. lengths.

Rubber V-Belts and Chute Lining

INFORMATION ON MULTIPLE and fractional hp V-belts is included in Form 3765-R — Industrial Rubber Div., Thermoid Co., Whitehead Rd., Trenton 6, N. J. Also contained is data on chute lining designed to provide resistance to abrasives and acids. Lining is available in 28 ft lengths and thicknesses from ¼ to 1 in.

Hand Lever Punches

CATALOG gives specifications and describes the features of hand lever punches ranging in size from model No. 4B which punches ¼ in. holes through 16 gage iron to the No. 94 punch capable of punching a ½ in. hole through ¼ in. stock — W. A. Whitney Mfg. Co., 636 Race St., Rockford, Ill. Hints on the care and use of lever punches are given and suggestions for ordering are outlined.

Oil Burners

SEVEN MODELS of oil burners, with firing ranges from 0.65 to 20 gph, are described in folder N-1132—Nu-way Corp., Rock Island, Ill. Fuel consumption and output in Btu are given for each model. Features on all models include sand-cast aluminum housing, air adjustment on fan discharge side, solid brass ignition conductors, heavy duty transformers with mid-point ground and shell type head.

Flexibility of Electronic Controls

FLEXIBILITY of electronic temperature controls in a wide range of heating and air conditioning installations is explained in a 16 page booklet — Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis 8, Minn. The booklet includes information on a choice of methods of thermostat operation; efficient sequencing of heating and air conditioning equipment operation; location of control components for maximum efficiency; and efficient compensation of thermostats to meet fluctuating load changes.

Heat Recoverers

FUEL SAVINGS and increased capacity from heating plants are claimed in a bulletin describing smoke-stack heat exchangers — Lepick Heater Co., 1742 Fourth Ave., S., Seattle 4, Wash. The bulletin gives specifications on the motor, fan, construction, heat output, stack temperature, air delivery and air velocity.

Glass Fiber Panels

FOLDER IC-95 describes flat panes and corrugated translucent glass fiber building panels — Alsynite Co. of America, 4654 De Soto St., San Diego 9, Calif. The company states that the panes are shatterproof and have insulating properties almost double those of glass. Typical applications of both the flat panes and corrugated panels are illustrated. Suggested construction details for metal covered buildings and double pitched skylights are included.

Ventilating Fans and Range Hoods

FOLDER DESCRIBES "Kitchen-aire" ventilating fans and range hoods — Stewart Industries, Inc., 320 E. St. Joseph St., Indianapolis, Ind. Installation data and specifications are given for models KA-14, KA-17W and KA-17R ventilating fans. Range hoods are available in lengths ranging from 24 to 48 in., are offered in six finishes. Also described are damper grilles, cap reducers, angle boots, etc.

Stainless Steel Siding

MANSARD PATTERN stainless steel siding for single sheet and sandwich wall building construction is described in bulletin 70-5 — Joseph T. Ryerson & Son, Inc., P. O. Box 8000-A, Chicago 80. The mansard pattern is also available in galvanized and black steel. Sandwich walls used by the company on two of its new plants were built up on structural steel framework, using 2½ in. corrugated galvanized sheets as the inner wall covered by a layer of 1 in. rigid insulation board and an outer sheeting of 18 percent chromium-8 percent nickel stainless steel. For single sheet siding the company used 26 ga, No. 2B finish stainless sheets. The sheets are available in a number of gages, sizes and finishes suitable for various types of building designs.

Electrode Selector Chart

CHART PRESENTS mechanical properties, color markings and other data to aid in the selection of arc welding electrodes — McKay Co., 1005 Liberty Ave., Pittsburgh 22. Information is given on mild steel, stainless, hard surfacing and special purpose electrodes.

Magnetic Starters

BULLETIN GEA-6301 describes magnetic starters for air conditioning and refrigeration equipment — General Electric Co., Schenectady 5, N. Y. Illustrated throughout, the booklet covers features, ratings and dimensions of the starters.

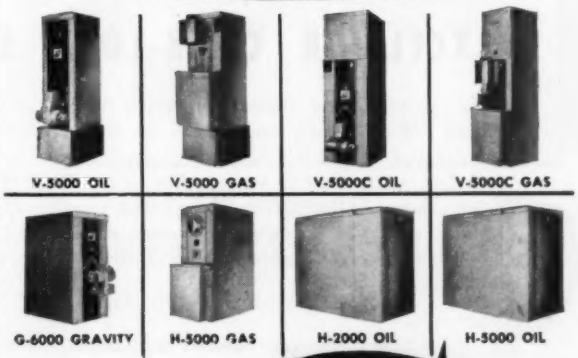
LOSING too many bids ?

Need a quality line of low-cost furnaces to compete for volume sales? Then you need SUN Fuel-Master furnaces . . . priced to sell against your toughest competition, yet in every respect equal in quality, dependability and workmanship to the finest furnaces on the market. *SUN furnaces carry a 20-year guarantee.*

There are 22 furnace sizes and models, oil and gas, plus companion cooling units for added sales. Price-wise, installation-wise, and profit-wise, you owe it to yourself to investigate the SUN line.

SELL SUN FURNACES FOR GREATER PROFITS

Sun FUEL MASTER



GET THE FACTS

We'll be glad to send you complete literature, prices, and dealership information on SUN furnaces. Write TODAY!

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J. V. Patten Company

SYCAMORE, ILLINOIS, U.S.A.

ESTAB 1898 • INC 1928

we hear that . . .

▸ ARMCO STEEL CORP. is stepping up its 1955 expansion and improvement program. W. W. Sebald, president, said that the board of directors had approved an increase in the 1955 program from $60 million to $111 million. In addition to rounding out the company's processing and finishing facilities, according to Mr. Sebald, the program will add 1,176,000 tons to the company's present 4,950,000 capacity, and will result in a capacity of 6,126,000 tons early in 1957—an increase of nearly 25 percent.

▸ A WILLIS H. CARRIER scholarship has been established by the Carrier Corp. at Cornell University. The Cornell grant is part of a scholarship program being developed by the company to honor both Dr. Carrier and J. Irvine Lyle, president of the company from 1930 to 1942.

▸ THE AIR CONDITIONING and Refrigeration division of Worthington Corp. is expanding its field sales and engineering force as well as its merchandising, sales training, application engineering and service personnel at the home office. "With over 100 percent increase in the air conditioning market in the last four years, and with our share of the market increasing steadily, we need many additional men to properly service our growing distribution organization," M. M. Lawler, the firm's vice president, stated. To accommodate the expansion program, the division plans an early move into new home office and manufacturing facilities recently purchased in East Orange, N. J.

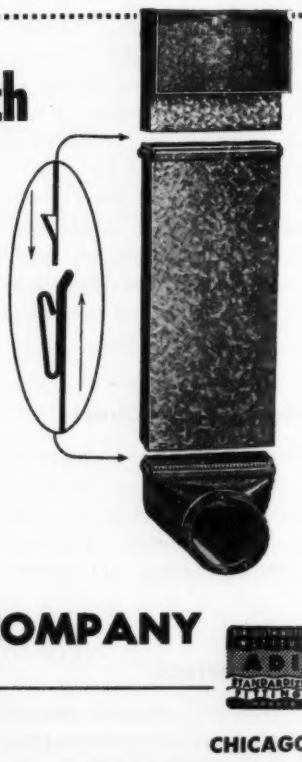
▸ KAISER ALUMINUM & CHEMICAL CORP. plans an additional expenditure of $75 million to enlarge and complete the initial facilities now under construction at Ravenswood, W. Va. The Ravenswood works will represent an investment of approximately $100 million, according to D. A. Rhoades, vice president and general manager, and will have an annual capacity of 320 million lb of aluminum sheet. "The decision to expand the Ravenswood plant is based on the continued increase in demand for aluminum sheet," Mr. Rhoades said. "We are confident that in the next five years the market will increase substantially."

▸ LIN BOWMAN of Bowman Heating Systems, Portland, Ore. won the summer sales contest conducted by Eureka Williams Co. According to Charles Branch, sales manager for the Williams firm, overall sales dur-

faster—better installations with

EXCELSIOR CLICK-LOCK SLIPS

The accompanying illustration shows three fittings—Stack Head, Wall Stack, and Boot—as now furnished with EXCELSIOR Click-Lock Slips. This type slip is standard on all EXCELSIOR fittings having slips. The detail of the lock shows how the fittings are just pushed together and locked. Much easier and quicker assembly saves time on every installation—plus firmer and better joints. Full details on request.



For details and prices on EXCELSIOR complete line of Standardized Pipe, Ducts, and Fittings ask for current Catalog No. 98.

THE EXCELSIOR STEEL FURNACE COMPANY

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EXCELSIOR HEATER & SUPPLY DIV.
The Excelsior Steel Furnace Company
879 Hersey Ave., St. Paul 4, Minn.
Telephone: Midway 6-7255

Phone: FRanklin 2-8120

EREX DIV.
The Excelsior Steel Furnace Company
One Industrial Rd., Wood Ridge, N. J.
Telephone: WEbster 9-2020

CHICAGO 6, ILL.

EXCELSIOR HEATING SUPPLY DIV.
The Excelsior Steel Furnace Company
2 East 3rd St., Kansas City 5, Mo.
Telephone: Victor 3715

ing the contest ran well over quota on "Oil-O-Matic" and "Gas-O-Matic" conversion burner units as well as "Air-O-Matic" cooling units.

▸ T. Reid Mackin has announced his retirement from active duty with International Heater Co., effective Oct. 1. Mr. Mackin joined the company's sales organization in Chicago in May, 1920. Since that time he has covered various territories in the Midwest, particularly the Chicago area and Wisconsin. He was in active charge of the Chicago office and warehouse operations for some time.

T. Reid Mackin

Vearl J. Heinis

▸ Vearl J. Heinis has been appointed general manager of the Rheem Products division of Rheem Mfg. Co., succeeding Gordon W. Mahatratt, a vice president of the firm who recently became secretary and treasurer. Before his recent promotion Mr. Heinis was general sales manager for the division. He joined the organization in 1946 and has served in several managerial capacities.

▸ Andrew C. Freimann was named vice president in charge of marketing for the York Corp. at the monthly meeting of the board of directors. Previously, he was general sales manager of the Delco Appliance division of General Motors. The appointment was effective Oct. 1.

▸ Henry M. Heyn, Albert L. Hollinger, and Robin A. Bell have been elected vice presidents of the Surface Combustion Corp. Mr. Heyn is sales manager of the Heat Treat division and Mr. Hollinger is manager of the Steel Mill division. Both have been at the company's Toledo plant since 1930. Mr. Bell, who joined the firm in 1928, is general manager of the Janitrol Heating and Air Conditioning division.

▸ Dravo Corp. has begun construction of a $400,000 research center adjacent to the company's main plant at Pittsburgh. Objectives of the research program

Guarantee
Carefree Fuel Supply
in Oil Burner Sales
with combination
VENTALARM® GAUGE
Underwriters' Approved

The famous whistling tank fill signal and easy reading gauge in one money-saving unit. Goes on tank as integral part of vent pipe. Signal case takes the place and saves cost of reducer bushing. One less tank opening needed. One item to install instead of three.

Specify tank depth and opening when ordering.

"BUTTON-LIFT" INSTALLATION

Lifting the button indicator draws cork arm up close to main shaft for easy installation even in partly filled tanks.

or the
SCULLY® GAUGE
Underwriters' Approved

A modern convenience in every way. Big figures, adjustable face, jam-proof lever arm, cork float. Accurate service-free operation.

Specify tank depth when ordering.

and the famous
VENTALARM
WHISTLING TANK FILL SIGNAL

Accurate fuel oil delivery without home entry. Truly *automatic* fills for the householder. Makes oil supply as clean and convenient as any other fuel.

A variety of models for new and old tanks.

"Just fill while the whistle blows."

Scully Products are manufactured under U.S. and foreign patents or patents pending.

See your regular Supply House.

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we hear that *(Continued)*

will be to improve the performance and durability of existing products and equipment and to develop new types of equipment for all branches of commerce and industry.

▸ STOCKHOLDERS of Whirlpool Corp. and Seeger Refrigerator Co. have approved the agreement of merger between the two companies and with Delaware Appliance Corp. to form Whirlpool-Seeger Corp. The air conditioning department of RCA is included in the assets of Delaware Appliance Corp.

▸ CONSTRUCTION WILL BE STARTED shortly on an administration and engineering research building at 2020 Montcalm St., Indianapolis, which will serve as the national headquarters of the Bryant division of Carrier Corp. The division will move its headquarter offices from its present location at 48 Monument Circle upon completion of the new building, which is scheduled for occupancy by July 1956. The new headquarters will include a section devoted to product research and development and another area for use in the company's contemplated sales and engineering training program.

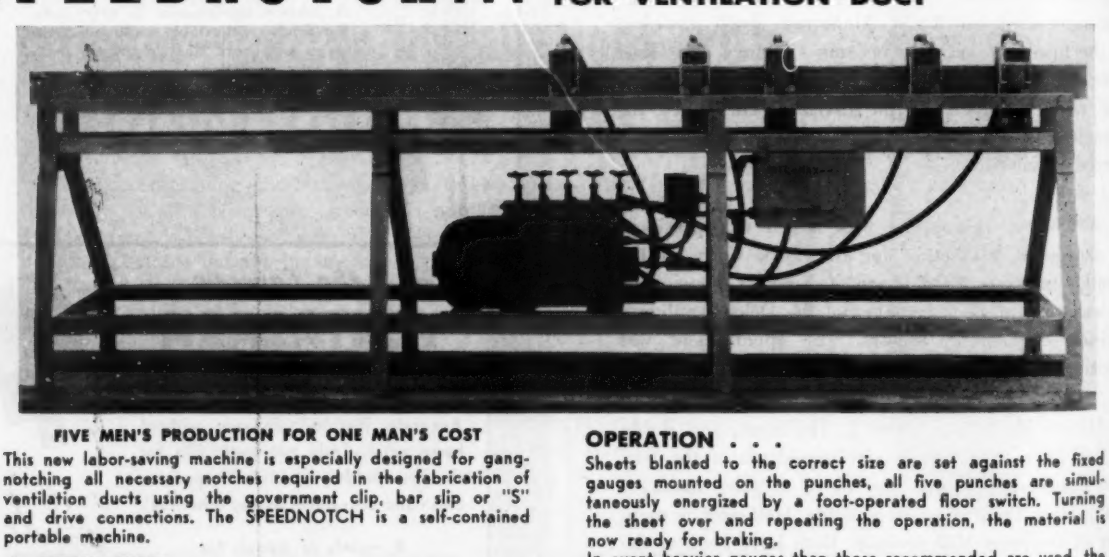
▸ AN ALL TIME HIGH for the production of "Delco-Heat" residential heating equipment was established during the month of August. Paul H. Rutherford, general manager of the Delco Appliance division, General Motors Corp., said that equipment was turned out at the rate of one unit every minute-and-a-half during the period.

▸ THE AIRTEMP DIVISION of Chrysler Corp. is one of the companies sponsoring displays at the new National Housing Center, Washington, D. C. The display contains two complete air cooled summer and winter home air conditioning systems as well as three room air conditioner models.

▸ EDWARD T. LORIG, chief development engineer of United States Steel Corp., recently received his second "Kelly Award" from the Association of Iron and Steel Engineers. The award is given annually for the first, second and third best papers on the greatest advancement in engineering and operating practices in iron and steel engineering.

▸ DIAMOND STEEL CORP., distributors of steel, aluminum, stainless and tin mill products, has moved its flat rolled division into a building located at 5429 W. Roosevelt Rd., Chicago.

SPEEDNOTCH... INSTANT SETTING MULTIPLE NOTCHER FOR VENTILATION DUCT



FIVE MEN'S PRODUCTION FOR ONE MAN'S COST

This new labor-saving machine is especially designed for gang-notching all necessary notches required in the fabrication of ventilation ducts using the government clip, bar slip or "S" and drive connections. The SPEEDNOTCH is a self-contained portable machine.

★ **SETUP TIME . . .**
Less than 60 seconds time is required in sliding and locking the punches in their respective positions, ready for notching.

★ **VARIETY OF WORK . . .**
Each of all five punches is equipped with shut-off valves. This feature allows notching of various types of duct ranging from 3½" to and including 10'-0". Capacity 18-ga. mild steel. Special notching dies can be mounted on punches.

OPERATION . . .
Sheets blanked to the correct size are set against the fixed gauges mounted on the punches, all five punches are simultaneously energized by a foot-operated floor switch. Turning the sheet over and repeating the operation, the material is now ready for braking.
In event heavier gauges than those recommended are used, the relief valve automatically opens.

COST SAVINGS . . .
Both small and large fabricators of ventilation duct can equally profit by this amazing time saver. Checks against present methods show an increase of production, high as 400%. As previously stated, the SPEEDNOTCH was designed for quick set-up, making its use profitable for even one or two pieces.

Dealers and Distributors Wanted. For information write

HARPER METAL PRODUCTS, LTD. 27 LANE PLACE, SAN BRUNO, CALIF.

wholesaler doings . . .

DEMONSTRATION OF combustion principles by I. M. Nelson (pointing) is observed by (from left): Joseph Vojtech, John Gazley and Charley Bennett. Lars Schulein (right) assists in the demonstration.

▸ APPROXIMATELY FIFTY Chicago heating dealers were guests of Armstrong Heating Supply Co., Chicago, at an educational meeting featuring I. M. Nelson, Boston Machine Works, as the main speaker. Mr. Nelson presented detailed procedures for improving service techniques. His remarks were punctuated by demonstrations of spray heads, draft control and other equipment. Other subjects treated by Mr. Nelson included firing the heating plant at its capacity, correcting common combustion chamber malfunctions, fundamentals of oil burning, baffle location and draft control.

▸ THE HOME HEATING AND COOLING department of General Electric Co. has been conducting a series of sales conferences for its leading distributors. The next meeting, scheduled to be held November 17 and 18 at the Homestead, Hot Springs, Va., will be attended by New Jersey and New York distributors. Personnel of New England and eastern Pennsylvania distributors will be entertained at the Homestead on November 21 and 22. Hosts will be executives from the Bloomfield plant as well as GE field regional managers, representatives and engineers who service the distributor accounts.

▸ SERVAIR HEATING & COOLING CORP., Indianapolis and the W. V. Alton Sheet Metal Co., Marysville, Calif. have been appointed distributors of air conditioning products by Servel, Inc. in the Indianapolis and Marysville trading areas. The Servair firm is located at 541 N. East St., Indianapolis. The Alton company has offices at 211 Elm St., Marysville.

▸ TWENTY-FIVE MINNEAPOLIS DEALERS were guests of Thermal Co., Minneapolis wholesaler, and Rheem Mfg. Co. at the recent all-star football game in Chi-

THE POWER DRAFT THAT ASSURES HEATING PLANT EFFICIENCY

Increasing concentration of CO_2 in the atmosphere makes it all but impossible for ordinary chimneys to produce enough draft over the fire for proper combustion. In addition, current industry trends demand even more draft . . . (1) new fuels that require more oxygen . . . (2) longer flue travel in furnaces and boilers . . . (3) tighter construction that causes boiler room air-locks. As a result, more and more heating plants are sooting flue passages and chimneys, and operating at low efficiency.

Quickdraft power draft stops sooting, eliminates chattering, drys wet chimneys and greatly increases combustion efficiency. It assures top performance from old and new heating plants. All models are approved by Board of Standards and Appeals, New York City. Write today for details.

Residential models for smoke outlet diameters 6, 7, 8, 9 and 10 inches.

N-277-QD

Quickdraft COMPANY
Canton 1, Ohio

QUICKDRAFT COMPANY
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P. O. Box 87-D
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Please send complete information about Quickdraft for:

☐ Residential heating plants ☐ Commercial heating plants

Firm _____

Individual _____ Title _____

Street _____

City _____ Zone ____ State _____

wholesaler doings *(Continued)*

cago. Preceding the game, the dealers were shown through Rheem's manufacturing plant and given a boat ride along Chicago's famous lake shore.

▶ WILLIAM VAN HOOGENHUYZE HDWE. Co., Inc., of San Antonio, Texas has been appointed a distributor of heating and air conditioning equipment by Perfection Industries division of Hupp Corp. Territory to be served comprises 64 counties in southcentral Texas.

▶ THE VALUE OF SERVICE was discussed by Demmler Bros., Pittsburgh wholesaler, in a recent issue of *Notes and Quotes* addressed to dealer customers. Service really sells, says Demmler Bros., who cite a number of instances where businessmen have increased sales volume by emphasizing to customers their willingness and ability to serve. Conversely, the editorial warns, business can easily be lost by those dealers who neglect this important aspect of their operation.

▶ A NEW DISTRIBUTOR of ventilating sets and industrial fans for the Sturtevant division of Westinghouse Electric Corp. is the Forslund Pump and Machinery Corp., Witchita, Kans. The Forslund company, which has a branch office in Kansas City, Mo., will serve the western half of Missouri and all of Kansas.

▶ TWO DISTRIBUTORS of heating and air conditioning equipment—Bryant Colorado Co. of Denver and Thermal Supply of Houston—have been awarded certificates for distinguished use of match book advertising in 1955. Thermal Supply won the award for fitting into the match cover a listing of the night telephone numbers of 13 sales officials in Houston, Beaumont and Galveston, Texas and Monroe, La. together with a listing of 38 manufacturers whose products are stocked. Another 20 manufacturers are listed on the match sticks themselves. Bryant Colorado uses a cover showing a cutout picture of a Boston terrier and the caption "Furnace Man." Listed on the match sticks are the types of heating equipment offered.

▶ MICHIGAN HEATING SUPPLY CO., 23869 Van Born Rd., Dearborn, Mich. has been named a wholesaler of the Heil Co.'s heating and cooling equipment in southeastern Michigan.

▶ TECHNICAL PRODUCTS CO. of Austin, Texas has been named a distributor of packaged air conditioning equipment by United States Air Conditioning Corp. to cover parts of Texas.

IT'S UP TO YOU!

SO CHOOSE THE VERY BEST . . .

BRANDES*

WALL BASE HEATING

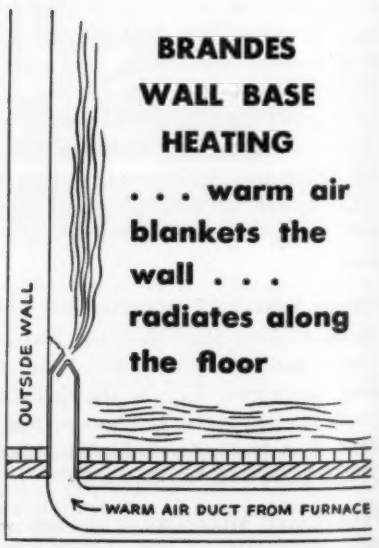
You're the one who makes the decision . . so make the right one . . . . BRANDES. You are sure to find the model and size that exactly fits your requirements in Brandes expanded new line. Three distinct lines and a total of fourteen different sizes to choose from gives Brandes the most complete selection on the market today. With Brandes Wall Base Heating you get the ultimate in beauty and performance . . . . at reasonable prices, too!

*PATENTED

THE BRANDES COMPANY

2046 Winnebago Street Madison 4, Wisconsin

Write for catalog



merchandising ideas

VISITORS examine the Westinghouse heat pump on display at the St. Louis "profile" home

▸ THE WESTINGHOUSE ELECTRIC CORP. is displaying a heat pump in the all-electric "profile" home in St. Louis sponsored by Westinghouse in cooperation with Union Electric Co. of Missouri and Famous-Barr Co. Other Westinghouse units being displayed in the model home are the "Precipitron" electronic air cleaner and the "Sterilamp" ultraviolet lamp designed to destroy airborne germs and to control odors.

▸ A CAMPAIGN to sell home owners on the advantages of modern, automatically controlled heating systems was launched the first of the month by General Controls Co. Projected in three key markets—Boston, New York City and Detroit—the program is aimed at preselling the home owner market for dealers and wholesalers in the area. Featured in the campaign are newspaper and billboard advertising as well as radio spot announcements. Local dealers and wholesalers will be tied into the program through insertion of their names in advertising copy and radio spots.

▸ THE VIKING AIR CONDITIONING division of National-U.S. Radiator Corp. is now packing two-dozen lots of "Thirs-Tee" furnace humidifier plate replacement sets in shipping cartons that convert into counter displays.

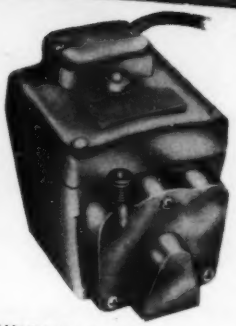
▸ A DRAFT CONTROL manufactured by the Windmaster Corp. is one of the products featured in the 1955 "House of Ideas" sponsored by House & Garden magazine. Approximately 100,000 persons are expected to visit the house, which is located in Birmingham, Mich. and features recent advances in style and engineering techniques.

▸ A 16 MM SOUND MOVIE on air diffusion has been produced by the Lima Register Co. and is now available for showings. The film explains the advantages of good design, engineering and construction in diffusers and shows actual laboratory smoke tests on floor, extended baseboard, wall and ceiling diffusers.

GET....

LITTLE GIANT

PRODUCTS FOR TROUBLE-FREE SERVICE!



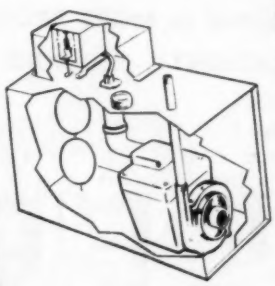
AVAILABLE IN 3 SIZES
Can be furnished with threaded front.

for EVAPORATIVE COOLERS

Little Giant hermetically sealed-in oil pumps need no lubrication. The three sizes available are just right for 95% of Evaporative Cooling Air Conditioning needs. Dependable in service, they are free from interruption. Little Giants will operate fully submerged.

OTHER APPLICATIONS:
- Milk cooler circulation.
- Cold drink dispenser circulators.
- Coolant circulation for machine tools.
- Yard fountains and minnow tanks.

LITTLE GIANT CONDENSATE REMOVER



Ideal for mechanical refrigeration installations; performs a necessary service wherever condensate must be drained. The pump is the dependable Little Giant fully submersible type perfectly controlled by the cycling of a positive action electric switch and float.

- Small and compact . . . quiet operating
- Coated to prevent corrosion
- Completely automatic
- Available in 3 sizes

Write for name of your nearby dealer

Write today for catalog sheets, specifications and prices.

LITTLE GIANT VAPORIZER CO., INC.
5101 Classen Blvd.
Oklahoma City, Okla.

appointments . . .

▸ DON H. DAVIDSON as field sales manager for the Mueller Climatrol division of Worthington Corp. Mr. Davidson is former sales vice president of Calcinator Corp.

Don H. Davidson

Dan J. Calori

▸ DAN J. CALORI as assistant sales promotion manager for Armstrong Furnce Co. Mr. Calori replaces T. J. Hughes, who resigned recently to accept another position.

▸ JOHN R. SCHREINER as a member of the staff of Carrier Corp.'s advanced engineering department. Mr. Schreiner was formerly technical secretary of the Air-Conditioning and Refrigeration Institute. William A. Neighbors has been named Atlanta district residential sales manager for the firm's Unitary Equipment division, succeeding Tom Ware, who has joined Carrier-Houston Corp. Previously Mr. Neighbors was with the Jacksonville, Fla. office where he served as assistant to the branch manager.

▸ A. S. CHIVERS as sales manager of Barry Controls, Inc. Promoted from the rank of assistant sales manager, Mr. Chivers has been with the company since his graduation from Massachusetts Institute of Technology.

▸ A. LACHLAN REED as director of industry-education relations for Minneapolis-Honeywell Regulator Co. Formerly special assistant to the U. S. Commissioner in Education, Mr. Reed will coordinate the corporation's relations with schools, colleges, and universities.

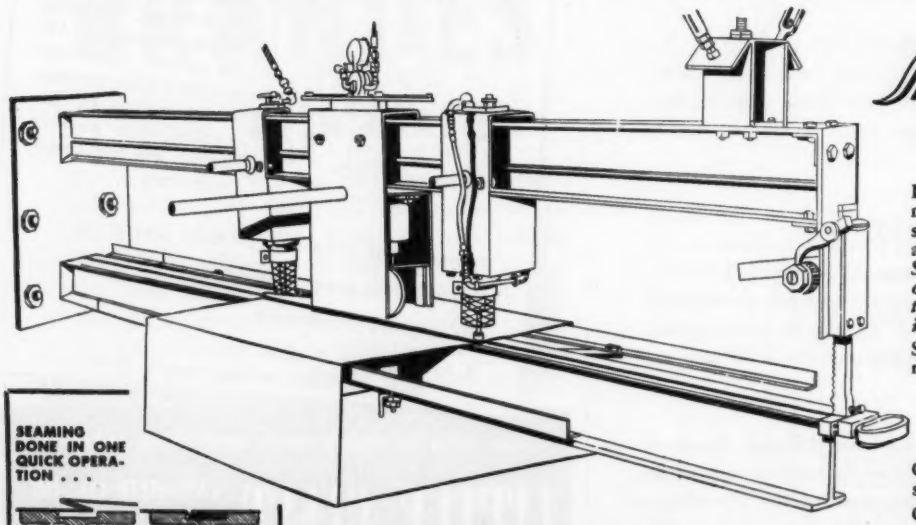
▸ GEORGE F. GRIFFIN as credit manager of Demmler Bros. Co. With 20 years of experience in the wholesale field, Mr. Griffin replaces the late George W. Best.

▸ R. K. HANDLEY as director of manufacturing for all Iron Fireman plants in the U. S. and Canada. Mr.

Announcing **MECHANICAL POWER SEAMING *for* DUCTS!**

. . . *are you interested in* MORE PRODUCTION SPEED? . . . PERFECTLY SMOOTH SEAMS?

. . . QUIET OPERATION? . . . *SURE* YOU ARE! BETTER INVESTIGATE . . .



Speed Seam

Here at last is a practical method of getting a perfectly smooth seam on ductwork in a matter of seconds! *The SPEED SEAMER will turn out over six times more work than your present hand seaming methods!*

SPEED SEAMER needs no more shop space than the "I" beam you now use, and it will easily and quickly handle ducts up to 10' in length and 5' in width.

Operates on compressed air system.

Get the facts today, for more profit tomorrow . . . Write

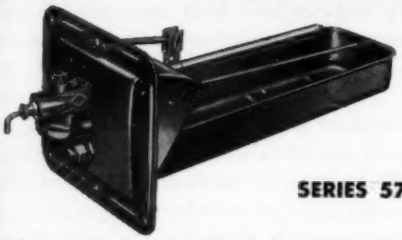
SPEED-SEAM CO. 820 North Wolcott Ave., Chicago 22, Ill.

COMPLETELY ASSEMBLED

Vaporite

AUTOMATIC HUMIDIFIER

OFFERS QUICKEST—FASTEST INSTALLATION
ADJUSTABLE TO SLOPING OR STRAIGHT BONNET FURNACES



SERIES 577

Stainless steel construction. Drip-feed puts just enough water in pan for fastest vaporization. Eliminates scum . . . no stagnant water pan.

Pre-assembly cuts labor time and costs. To install simply cut hole in plenum wall, slip VAPORITE in just as it comes from shipping package.

Get complete information. Write. A-11.

Automatic Humidifier Co.
CEDAR FALLS, IOWA

Malco HAND SEAMER

GREATER SQUEEZING POWER WITH HALF THE PRESSURE

Price $4.95

OVERALL LENGTH, 8-¼"—
WEIGHT, 1-⅛ #
WIDTH OF JAWS, 3-¼"—
JAW DEPTH, 1-⅛"

- COMPOUND LEVERAGE
- FORGED STEEL JAWS
- SPRING RETURN ACTION
- FORMED STEEL HANDLES
- WILL FLATTEN SEAMS INSIDE A 3-¼" OPENING
- GUARANTEED TO SATISFY

CONTACT YOUR JOBBER OR WRITE ▶▶▶ Malco PRODUCTS
405 EAST 48th STREET
MINNEAPOLIS, MINNESOTA

For removing a LARGE VOLUME of Fumes or Air at HIGH VELOCITY

allen

VERTICAL DISCHARGE FAN

Whenever you face the problem of discharging fumes or vapors through a roof ventilator so that they will not short circuit back through building openings, you'll find the solution in this new Vertical Discharge Fan. It is designed especially for industrial applications that require the removal of a large volume at high velocity. The "VD" roof fan is fabricated of zinc-coated iron sheet with welded construction throughout. Automatic wing dampers open with air blast, close weathertight when not operating. The "VD" is available as direct drive with motor mounted inside air stream or as "VDR" with motor mounted outside throat of ventilator. Either type is available in a wide range of capacities and sizes.

Write for catalog on complete line of roof ventilators.

ALLEN ENGINEERED VENTILATION

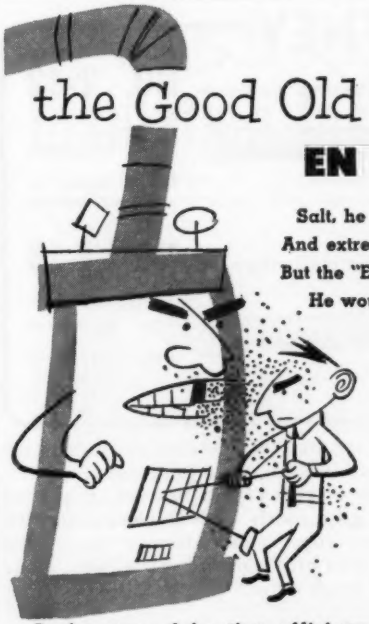
ALLEN COOLER & VENTILATOR INC.
ROCHESTER, MICH.

Roof Ventilators for Every Commercial and Industrial Need

---

the Good Old Days?

EN GARDE!



Salt, he tried, and dynamite
And extreme amounts of heat.
But the "Expert" battled on for
He would not admit defeat.

Rods and sticks
and wire things
Only made the
furnace fight.
A blast of soot
was all it took
And the "Expert"
was in flight.

To be sure of heating efficiency, use
"CLEAN RIGHT" SOOT REMOVER
NON-CORROSIVE NON-EXPLOSIVE
LEAVES NO RESIDUE
Always look for the broom on the package.

MILLER PRODUCT CO.
1046 CEDAR ROAD • LANSING MICHIGAN

In to stay when you use P-K
TRADE MARK REG. U.S. PAT. OFF.

Hardened
Screwnails

for fastening
SHEET METAL to WOOD
WOOD to WOOD
or other fastenings
where you need
NAIL DRIVING SPEED with
SCREW HOLDING POWER

Ask your P-K Distributor for samples and the SCREWNAIL folder, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

PARKER-KALON®
FASTENERS

WHITNEY

Tinner's Riveting Hammer NO. T-12
Weight — 12 ounces
Weight Dozen — 17 pounds

Tinner's Setting Hammer NO. T-18
Weight — 18 ounces
Weight dozen — 21 pounds

These hammers are used by workmen everywhere because their weight and balance make jobs easier.

Whitney hammers are accepted because of perfect balance, the leather grip which CAN'T loosen, and because the sheet metal edge cannot damage the handle neck. One-piece prevents breakage and splintering. Made in both polished and black finish.

Please write us for literature.

Carried in stock by all leading jobbers.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

appointments

(Continued)

Handley joined the company in 1934 and since 1953 has been manager of Cleveland plants one and two.

▸ GEORGE F. UNBEHAUN and Donald Aingworth as sales manager and general manager respectively of the Herbster Furnace Co. In the heating field for 12 years, Mr. Unbehaun was special sales engineer in the Ohio territory before assuming his present position. Mr. Aingworth, with a background of 24 years in the heating industry, will have responsibility for service and engineering as well as office and factory management.

▸ FRANKLIN L. WHITE as manager of the air conditioning division of Philco Corp. In his new position, Mr. White, formerly an executive of York Corp., will work with Jack Cherry, sales manager of the division.

▸ ANTHONY J. DEFINO as vice president and general manager of the air conditioning division of Servel, Inc. Mr. DeFino is former vice president and general manager of Fedders-Quigan Corp.

▸ RALPH G. GRIFFIN as manager of the Cincinnati district office of Worthington Corp. Mr. Griffin, who

SEVERAL MAN HOURS LOST DAILY ... until a Delta OIL UNIT HEATER warmed up this loading platform!

PROBLEM: It was impossible for loaders at this open warehouse platform to work more than short shifts in cold weather.

SOLUTION: A Delta Oil-Fired Unit Heater was installed. It was selected because heat output is high while fuel costs are extremely low. Installed fast and easily moved wherever else needed as the weather gets warmer.

RESULTS: Loaders can now work a full day comfortably in any weather. Number of trucks loaded per day has doubled. Operating costs of the Delta Unit Heater are negligible.

Send for complete new catalog

This is only one of hundreds of jobs that a Delta OIL Unit Heater can do better and more economically.

DELTA HEATING CORPORATION
TRENTON 8, NEW JERSEY

joined the firm in 1930, succeeds Earle W. Vinnedge who has been named special representative for the Cincinnati district office.

▸ DEANE W. CHALLIS as district manager covering part of northern Indiana for the Meyer Furnace Co. Mr. Challis will have offices in Marion, Ind. Alton E. Withbroe, with headquarters in Green Bay, Wis., will serve as district manager covering the southern Wisconsin territory.

▸ GLENNON J. DOYLE as vice president in charge of operations for Copeland Refrigeration Corp. Before joining the Copeland company he was vice president and general manager of the C. Nelson Mfg. Co., St. Louis, and before that was vice president in charge of production for Hussmann Refrigeration Co. George E. Dombrowski, previously associated with the Long Mfg. division of Borg-Warner Corp., has been appointed personnel director for the firm. Terrell J. Small has been named district sales representative to cover the states of Texas and Oklahoma.

▸ DON MCANALLY as sales promotion manager of the L.O.F. Glass Fibers Co. Before his recent promotion he served as assistant to the director of public relations. Chester E. Shepperly has been named district manager

Make Stronger Fastenings this easy way

P-K
TRADE MARK REG. U.S. PAT. OFF.

Hardened
Masonry Nails

DRIVE EASILY into mortar, cinder blocks, and other soft masonry without pilot holes . . . into predrilled holes in harder materials. **HARDNESS and TOUGHNESS** perfectly balanced . . . they drive in straight to stay tight, even under shock or vibration.
COST YOU LESS and are much simpler to use than plugs, expansion bolts, other devices. Samples free . . . try them. Ask your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

PARKER-KALON®
FASTENERS

PRESS BRAKES

Series A Light Duty Model CHICAGO Press Brake

In the almost limitless variety of operations on sheet metal and steel plate, CHICAGO Press Brakes are well known for their consistent production performance. The proved all-steel construction and the flexibility of design in all models offer a versatility that is hard to beat. With 42 standard sizes, there is a CHICAGO steel press brake to suit your requirements.

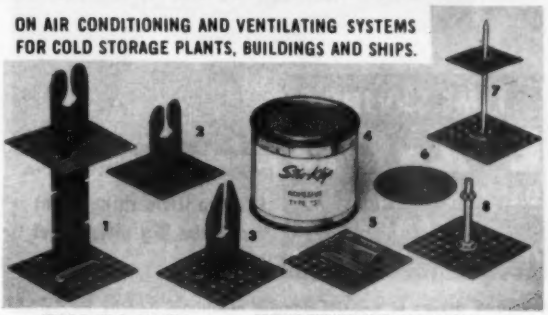
Full Particulars and Recommendations for Any Job on Request

4934

DREIS & KRUMP MANUFACTURING COMPANY
7404 S. Loomis Blvd., Chicago 36, Ill.
CHICAGO STEEL BENDING BRAKES BOX and PAN BRAKES PRESS BRAKES

Use Stic-Klip® for
Insulation Installation

ON AIR CONDITIONING AND VENTILATING SYSTEMS FOR COLD STORAGE PLANTS, BUILDINGS AND SHIPS.



1 TYPE B with Locking Plate
2 TYPE B
3 TYPE A
4 TYPE S ADHESIVE
5 SPRING TUBING CLIP (¼" and ⅜").
6 HOLDING PLATE used with Type A and B
7 TYPE N with Speed Washer
8 INSERT BASE Securing Signs, Wall Cabinets, etc.

Stic-Klips permanently bind almost any insulating material to masonry, wood, metal — flat, corrugated, curved, unusual-shaped. This modern method eliminates drilling, puncturing metal — saves time and money.

For illustrated booklet on any of these applications, write Dept. AA

Stic-Klip MANUFACTURING CO.
52 Regent St., Cambridge 40, Mass.

BEVERLY *Pneumatic* THROATLESS SHEAR

CAPACITY
3/16 MILD STEEL
10 GA.
STAINLESS

FASTER,
EASIER CUTTING
to any Shape!

- Compactly built for maximum visibility and efficiency
- Operates on 35 to 150 PSI air pressure
- Adjustable power and return stroke length and speed

Beverly Pneumatic Shears combine all the advantages of Beverly Throatless Shears with fast, effortless cutting action through air cylinder operation. Air operation speeds work, permits accurate cutting to a pattern or template, as operator can concentrate on guiding work through the shear. Flow control valves permit precise adjustment of stroke speed; adjustable actuating arm controls stroke length. Foot Switch permits operator to use both hands on the work piece. Operates on 110V. 60 cycles AC and 35 to 150 PSI air pressure.

See your nearby Beverly Distributor
Write for catalog sheet and complete details.

BEVERLY SHEAR MANUFACTURING CO.
3020 W. 111th STREET • CHICAGO 43, ILLINOIS

TIME SAVING
E-Z-ON
DAMPER REGULATORS
PERMIT
INSTANT ASSEMBLY

(Shown— head piece of #27 E-Z-ON)

It's the little things that make the Big difference!

Advanced design of E-Z-ON damper regulators permits on-the-job Assembly with only a hammer — no drilling — no rivets. This 16 gauge steel regulator is simply positioned on the damper by sliding it over the scribed center line. The E-Z-ON accurately stays in position until a hammer blow drives the sharp prongs through the damper (E-Z-ON prongs will pierce 22 gauge metal.)

E-Z-ONS PROVED MORE PROFITABLE

Job Histories prove that your apprentice or journeyman can save two-thirds of their damper makeup time with E-Z-ONS.

M. A. GERETT Corp.
724 W. Winnebago, Milwaukee, Wis.

Stocked in CANADA by
THERMIDAIRE CORP.
7-9 Cumberland Street, Toronto

STYLE & SIZE
Famous E-Z-ON standard design No. 27
Solid end tail piece, threaded head piece and wing nut — 3/8" bearing.

Superior E-Z-ON
"Snap-Tite" Design No. 29
Tail piece with retractable snap end bearing, threaded head piece and wing nut — 3/8" bearing.

appointments *(Continued)*

of the Boston area and will headquarter at a new office located at 701 Washington St., Newtonville, Mass. James J. Secor, Jr., with headquarters at the Narberth, Pa. branch office, will serve as district sales manager of the Philadelphia area. Two other recently appointed district sales managers are Edward A. McCabe, who will cover the New York area, and Francis W. McPeek, who will handle the Cincinnati area. Ralph G. Cox has been named sales manager of the company's southeastern region, and Randolph H. Barnard Jr. has been appointed field representative in that region's Charlotte, N. C. office. Mr. Cox's headquarters will be at 1132 Peachtree St., N. W., Atlanta.

J. W. Butcher

Robert E. Goodacre

▸ J. W. BUTCHER as manager of the Minneapolis-St. Paul district sales office recently opened by Inland Steel Products Co. at 1308 Foshay Tower, Minneapolis. Territory to be covered comprises Minnesota, South Dakota, North Dakota and Nebraska. The company's newly opened Dallas office, located at 5523 Dyer St., will be headed by Robert E. Goodacre. The new office will handle sales in all parts of Texas except El Paso, which is under another sales district.

▸ R. E. CASSATT as manager of commercial sales for York Corp. Mr. Cassatt is former sales manager of the Refrigeration Appliance division, Fedders-Quigan Corp.

▸ EDWARD BECKER as sales manager of Fedders-Quigan Corp. Mr. Becker was New York district sales manager of the company before his recent promotion.

▸ JEROME F. FERDINAND as sales manager of Punch Products Corp. Mr. Ferdinand is a former director and vice president in charge of sales of the Wales-Strippit Corp.

▸ S. MOROH as manager of the air conditioning and warm air section of National-U. S. Radiator Corp. W. H. Schanhite is in charge of distribution for this section.

▸ DONALD W. MILESTONE as manager of the western regional sales territory for Perfection Industries divi-

BRUCE F. McLOUTH
The Sales Engineers
Minneapolis

"Based on 28 years' experience in forced warm air heating, I firmly believe the Dust-magnet electrostatic filter is the greatest step forward towards the perfect filter. It traps and holds more dirt and pollen, is easiest to clean, is most reasonable in price, and requires no special treatment to achieve maximum effectiveness."

The Dust-magnet electrostatic filter is made of patented woven plastic, installed under spring tension in a galvanite steel frame. Ask for literature.

DUST-magnet T.M.

STODDARD INDUSTRIES, INC.
1545 Kingsbury St., Chicago 22, Illinois

OIL HEATING MEN—

BE AN EXPERT IN YOUR FIELD!

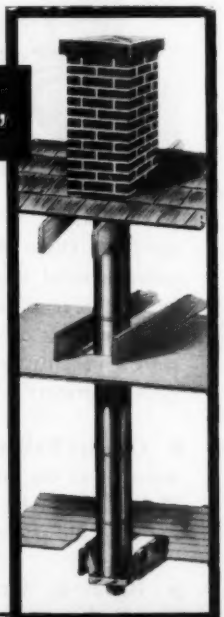
- The oil heating industry has great need for men with specialized training.
- The *Boston School of Advanced Oil Heat Training* offers a 3-day course covering: proper firing rates—combustion chamber design—baffling of boilers—draft control—mating of air and oil patterns—nozzle application tests.
- For men with one or more years experience in the installation and service field *only*.
- This course is offered every other week during most months of the year.

Write for complete details

BOSTON SCHOOL of ADVANCED OIL HEAT TRAINING, INC.

Manufacturers—Central National Bank Bldg.
Lynn, Massachusetts

Now!
NEW AIR-JET "BRICK BEAUTY"



Why bother to build a chimney? Now you can enjoy all the time and money-saving advantages of an Air-Jet packaged unit . . . and, at the same time, increase the value of your homes with a chimney that looks just like brick!

The new "Brick Beauty" is made of embossed aluminum, finished in brick red color with depressed off-white mortar lines. Weighs less than 100 lbs.! Can be installed in one man-hour! And look at these quality features.

Shockproof, high temperature porcelain steel smoke pipe. Special draft top guards against downdrafts. Exclusive rain groove eliminates all leakage. UL approved for use with all fuels. You can take your choice of 2 models in 3 different smoke pipe sizes.

WRITE TODAY
for complete information!
A few distributorships available.

GENERAL PRODUCTS COMPANY, INCORPORATED
DEPT. B-11
FREDERICKSBURG, VIRGINIA

- A PACKAGED CHIMNEY WITH AUTHENTIC BRICK LOOK

THIS DEVIL BRINGS YOU EXTRA PROFITS!

Not from the sale of stock pan evaporator plate type humidifiers but from the merchandising of the Walton Model WF.

Chase "Devil Dryness" from customers' homes with a humidifier of top performance, revolutionary operating principle. NO JETS – NO PANS – NO PLATES – No service headaches.

Now you can keep warm air customers contented customers by giving them "positive humidification" at a price that can earn profit never before realized. Write today for the "Devil Dryness" merchandising plan and your copy of the free dry air detector.

Walton

Walton Laboratories, Inc., Irvington 11, N. J.
Dept. AA-11
Please send "Devil Dryness" Merchandising Plan and free Dry Air Detector.
Name of firm_____
Address_____
City_____ Zone_____ State_____

Alcoa's modern, windowless Screw Machine Products Plant is equipped with 49 All-Aluminum Burt Low Type Roof Ventilators

Aluminum Co. of America Licks Ventilation and Oil Mist Problem with Burt Ventilators

The 200,000 square feet of floor space in this modern building has no cross circulation or natural ventilation. Production operations create considerable heat and oil mist. All-Aluminum 48" Burt Low Type Roof Ventilators are used to maintain a pleasant working atmosphere the year around. Oil mist is scarcely discernible. 25 ventilators supply air — 24 exhaust. According to the Alcoa Staff Engineer for Air Conditioning, the initial cost of air supplied by the Burt Ventilators is less than one-fourth that of a centralized duct system.

Send for FREE Data Book! Write for Burt Data Book SPV-101-E on Burt's complete line.

FAN & GRAVITY VENTILATORS • LOUVERS • SHEET METAL SPECIALTIES

Burt's 53 years of experience is available to solve your ventilating problems — without obligation.

The Burt Manufacturing Company

38 E. South St. Akron 11, Ohio

MEMBER POWER FAN MANUFACTURERS ASSOCIATION

Here's the New "JET-8" GAS CONVERSION BURNER

Make this your BANNER YEAR for profits, with Banner's new "Jet-8" Gas Conversion Burner.
1—Piece Cast Iron Burner Head
Telescoping Venturi.
Minneapolis-Honeywell Powerpile Controls.
Input — 80,000 to 200,000 B.T.U.
Silent Operation.
Competitively priced.
Write today for complete information and prices.

BANNER BURNER CO.

DEPT. A

227 E. INDIANOLA AVE., YOUNGSTOWN, O.

appointments (Continued)

sion of Hupp Corp. T. J. Kasper has been appointed sales representative covering metropolitan New York and northern New Jersey for the division.

▸ DONALD R. MECKSTROTH as manager of marketing services for the air conditioning division of Westinghouse Electric Corp. In his new position Mr. Meckstroth will direct and coordinate all internal sales service, including advertising and promotion, market research, sales training and product service. He was formerly associated with Servel, Inc. Donald W. Davis, Jr. has been named midwestern regional manager of the firm's Sturtevant division and will have charge of sales, engineering and the application of air handling equipment in the area's eight states. He has been with the division since 1937.

▸ J. THOMAS CALHOON as advertising supervisor for the Janitrol Heating and Air Conditioning division of Surface Combustion Corp. Mr. Calhoon has been copywriter and account executive with several Columbus advertising agencies.

J. Thomas Calhoon

Willard J. Watchler

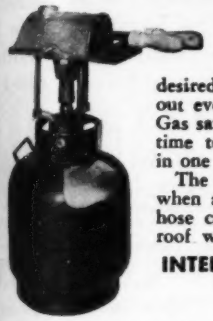
▸ WILLARD J. WATCHLER as laboratory manager for the C. A. Olsen Mfg. Co. Mr. Watchler was formerly assistant chief engineer. In his new position he will be in charge of all laboratory personnel as well as the scheduling of departmental activities for the company's recently completed engineering and development laboratory.

▸ GORDON E. BLOOM as assistant to the general sales manager of the Incinor division of Bowser, Inc. Mr. Bloom has been associated with the gas appliance industry and gas utilities fields for the past 26 years.

▸ HENRY B. WILLIAMS as manager of sales for the New York area steel service plant of Joseph T. Ryerson & Son, Inc. Mr. Williams joined the company in 1916. Harold E. Stavers has been appointed sales manager for the Detroit steel service plant and Homer E. Rieker has been named to the newly created post of manager of sales for the Cleveland steel service plant. Mr. Rieker was formerly manager of sales of tubular products and cold finished steel bars, in which capacity

INSTANT LIGHTING **Insto-Gas**
T. M. REG. U. S. PAT. OFF.

SOLDERING IRON HEATER



Sheet metal contractors can now have hot soldering irons in 2 minutes and with Insto-Gas they can be kept at the desired temperature all day long without even looking at the heater. Insto-Gas saves 40% on fuel cost and enough time to pay for the entire equipment in one week's operation.

The Insto-Gas soldering iron heater when attached to the cylinder by 50-ft hose can be operated on a scaffold or roof without moving the cylinder.

INTERNALLY FIRED SOLDERING IRONS

These Insto-Gas soldering irons are designed for continuous operation with no stopping to change irons. Made in two sizes; the No 1-S (2) for fine work and the No 2-S (5) for heavy soldering.

Listed by Underwriters Laboratories and Factory Mutuals Laboratories

Write For Free Folder

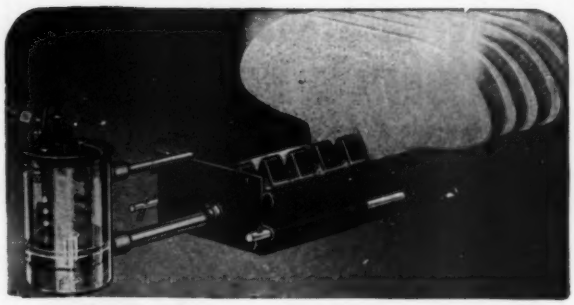
INSTO-GAS CORPORATION
DETROIT 7, MICHIGAN

ASK FOR NEW FOLDER ON INSTO-HOT SALAMANDERS

✓Check your needs . . .

- ☐ *Personnel*
- ☐ *Equipment Sales*
- ☐ *Equipment Needs*
- ☐ *Manufacturers Agents*
- ☐ *Lines, etc.*

Whatever your needs in any of the above classifications . . . you can solve them quickly with a classified advertisement. The space rates are reasonable and results are quick. Closing date—the twentieth of the month preceding issue.



BIG PROFITS for Little Extra Work

It costs so little more, yet pays so big for your customer and yourself when you make the installation a Monmouth Humidifier job. Takes only a few minutes while you are on the job, builds greater customer satisfaction and good will, means increased profits and year after year sales of new diffusion plates for you. Made in capacities up to 420,000 B.T.U. A proper size for every heating unit. All employ fast diffusion Monite plates and service-free, non-corroding, stainless steel and bronze Flotrol control.

Write for descriptive literature, prices and discounts

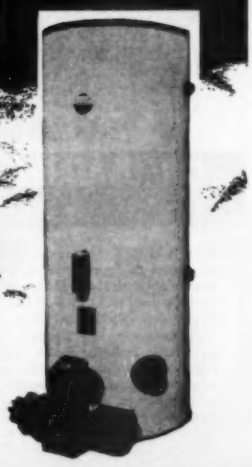
CLEVELAND HUMIDIFIER CO.

7802 Wade Park Avenue — Cleveland 3, Ohio

MONMOUTH HUMIDIFIERS

30 GALLONS *plus* OF **HOT WATER** PER HOUR!

QUIET AUTOMATIC
OIL FIRED WATER HEATER



FOR YEAR AROUND

HOT WATER

CHOICE OF GALVANIZED, COPPER OR GLASSLINED.
NO PILOTS TO TURN ON OR OFF
NO VALVES TO BOTHER WITH
NO EXTRA STORAGE TANK NECESSARY

MADE IN TWO SIZES #90 #200 HEATERS

JUST CLEAN HEATED HOT WATER . . . . GOOD ENOUGH TO DRINK

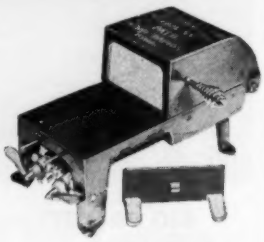
A PRODUCT OF
QUIET AUTOMATIC BURNER CORP.
J. G. KAVENY, President
33-35 BLOOMFIELD AVE. — NEWARK 4, N. J.

Powerful, economical

BENCH FURNACES

No. 101 Bench Furnace

Today's best bench furnace for efficient heating of soldering coppers up to 12 pounds a pair plus hardening, tempering and annealing carbon steels. Blower, muffle not needed. Has baffle plate that partly closes front of Johnson patented, shaped blast-directing hood. Bottom, hood refractory lined. 2 burners. Firebox 3¾ x 4½ x 5½. $20.80 F.O.B. factory.



No. 118 Combination Bench Furnace

Efficient all-round shop furnace. Heats largest soldering coppers, stenciling irons; tempers, heat-treats, anneals, case hardens. Hood lid removable for inserting 22 lb. pot for melting lead, tin, babbit; side doors allow heating long rods. 3 burners. Refractory-lined firebox 6¼ x 5 x 6½. The pot and front baffle are included. $38.50 F.O.B. factory.

Write for Free Literature!

IF IT BURNS GAS LOOK TO

SINCE 1901 **JOHNSON**

JOHNSON GAS APPLIANCE CO.

580 E Avenue N.W. Cedar Rapids, Iowa

Convert Gravity Furnaces With A CIRCULATAIRE Bonnet Blower

CIRCULATAIRE ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "hard to heat" rooms, boosts warm air quickly through all the heating pipes. CIRCULATAIRE is easily and quickly installed without removing the bonnet. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no baffles to be built. The CIRCULATAIRE is rigid, quiet and efficient in operation.

NOW READY — *New CIRCULATAIRE Sales Aids add effectiveness to selling interview, conserves valuable selling time and increases sales.*

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor.

GET THE FACTS TODAY! WRITE...

CIRCULATAIRE DIVISION OF CORLETT-TURNER CO. 1007 S. KOSTNER AVE., CHICAGO 24.

appointments (Continued)

he is being succeeded by William B. Hawk. John V. Burley, Jr. succeeds Mr. Hawk as field representative in the Columbus, Ohio area. Robert A. Daggit has been appointed assistant manager of sales for the firm's Chicago plant. Until his recent promotion Mr. Daggit acted as sales representative in the northern Indiana territory, which is now being covered by Robert T. MacGill.

▸ RICHARD L. GRIFFIN as assistant sales manager of John Wood Co., Heater and Tank division. Leroy Norris will represent the company in the Washington, D. C. and northern Virginia areas.

▸ AMIEL B. CARAMANNA as district manager covering the New Jersey area for the Airtemp division of Chrysler Corp. Previously, he was a factory representative for Harvey-Whipple, Inc.

▸ JACK P. WALDROP as sales representative for the Metalbestos division of William Wallace Co. Mr. Waldrop's territory will include Mississippi, Louisiana, and western Tennessee.

▸ MILTON G. NICHOLAS, Dallas as sales engineer for the heating controls division of Robertshaw-Fulton Controls Co. Mr. Nicholas will cover the states of Texas, Oklahoma, Arkansas and Louisiana. He will have offices at 4924 Greenville Ave., Dallas. John R. Guenther, with offices in the Merchandise Mart, Chicago, will represent the division in the Midwest area.

▸ THE J. W. THOMPSON CO., 4543 Delmar Blvd., St. Louis as manufacturer's representative for the Mammoth Furnace Co. Territory to be served includes parts of Illinois and eastern Missouri.

▸ WARREN L. EDWARDS as heating sales representative working out of the Heil Co.'s Cleveland district sales offices. Mr. Edwards will work with the company's heating and air conditioning equipment wholesalers in the states of Michigan, Ohio, West Virginia, Maryland, Pennsylvania, New York and the province of Ontario.

Obituary

Leo Friedman

▸ LEO FRIEDMAN, founder of the Cleveland Heater Co., died suddenly September 26 while attending Yom Kippur services at the temple. Mr. Friedman, 72, had been active for many years in the American Gas Association. He is survived by his brother, Arthur Friedman, vice president of the heater firm.

Sodering Aluminum is easy

WRITE TODAY FOR FREE SAMPLES

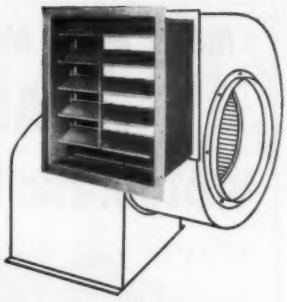
Permanent aluminum sodering is made simple and easy with ALLEN Alumi-Soder. Complete in itself, flux and soder are combined in exactly the right proportion in a convenient "handy-to-use" stick.

ALLEN TRADE MARK REG. U.S. PAT. OFF.

L. B. ALLEN CO. INC.
6702 Bryn Mawr
Chicago 31, Ill.

ELGO AUTOMATIC SHUTTER for Unit Blower

Self-contained in adapter sleeve for attachment to blower. Louvers of light gauge aluminum with felt silencer strips. Rustproof hinge rods. Weatherstripped. Built to fit your blowers.



Write for circular and prices

Free CATALOG

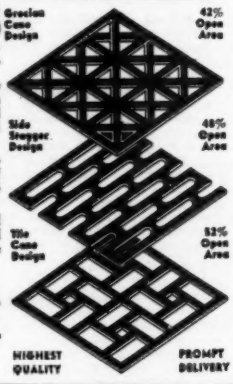
ELGO SHUTTER & MANUFACTURING CO.
2738 W. Warren Detroit 8, Mich.

PERFORATED METALS FOR EVERY INDUSTRIAL USE

The "Ornamental" light-gauge designs here illustrated are only a few of the many you can choose from in our new Catalog 39 and we are always pleased to quote on original designs or special work of any kind.

For larger unit-openings, using metals up to ¼" in thickness, we offer a wide variety of equally attractive designs in our Catalog 36 on Diamond Architectural Grilles.

Send us your blueprints. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



DIAMOND MANUFACTURING CO.
Box 34 WYOMING PENNA.
(Wilkes-Barre Area)

Sales Representatives in all principal cities. Consult Your Classified Telephone Directory.

HIGHEST QUALITY PROMPT DELIVERY

-BB- NEW DESIGN!

STYLE "K" END PIECE WITH OUTLET

Look for Quality When You Buy

Sizes 4" and 5" with Oval Outlet fits 3" round or 2"x3" square pipe.

Sold through leading jobbers everywhere.

Made in all metals: Galvanized, Stainless Steel and Copper.

Manufactured by

BERGER BROS. COMPANY
229-237 Arch Street Philadelphia 6, Pa.

Schild

The TRIPLE-LIFE ALL-PURPOSE SHEET-METAL CUTTER

An essential tool in the automotive, air conditioning, heating, and building maintenance industries. Cuts panels cleanly—straight line, square, triangle, curve or circle. Blades easily sharpened, thinned or replaced. FREE replacement blade means two cutters for the price of one.

SCHILD MFG. CO. Dept. AA-2
WHITE ROCK STATION, BOX 11571 DALLAS 18, TEXAS

LIST PRICE $5.95 WITH FREE EXTRA BLADE

ORDER FROM YOUR DISTRIBUTOR — DISTRIBUTOR INQUIRIES INVITED

ORNAMENTS

STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING
89 ADAMS STREET BROOKLYN, N. Y.

KIRK & BLUM THE BLOW PIPE SUPPLY HOUSE

Shown being loaded at Kirk & Blum's inside loading dock are eight Design 5 Centrifugal Collectors, elbows, prefabricated Collector Cones (requiring only bolting for assembly), and large blow pipe.

KIRK & BLUM WILL FURNISH YOUR REQUIREMENTS FOR BLOW PIPE PARTS, CYCLONE DUST COLLECTORS AND SUPPORTS. WRITE FOR LITERATURE AND PRICES.

THE KIRK & BLUM MANUFACTURING COMPANY
3180 Forrer Street Cincinnati 9, Ohio

MANUFACTURERS OF

FURNACE PIPE AND FITTINGS,

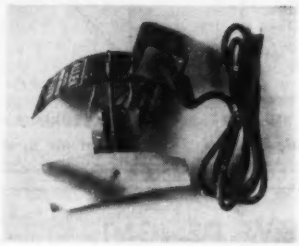
Prefabricated Ducts,

also conductor pipe, eaves trough, drip edge, rake strip, etc.

THOR METAL PRODUCTS CO., INC.
Box 118 Eastwood Station Syracuse, N. Y.

MAKE MORE MONEY THIS YEAR

with ALLEN'S Automatic Booster Fan



- Circulates Heat
- Quiet . . . Efficient
- Easily and Quickly Installed
- Saves Heating Dollars
- Low Priced

Warms hard-to-heat ROOMS and BASEMENTS

Built for use in gravity type hot air heating ducts, Allen's Booster Fan can be easily installed in 8, 9, or 10-inch pipe in a few minutes. When mounted, simply plug it into the house current . . . set the control for the most efficient duct temperature . . . and it works automatically, Spring, Fall and Winter. Rubber cushioned throughout, it may be mounted in bedroom pipes without disturbing sleep.

Write for new catalog sheet and dealer discounts.

PARK HEATING SPECIALTIES

6212 Goodrich Avenue **Minneapolis 16, Minnesota**

Statement of Ownership and Management of

AMERICAN ARTISAN

for October 1, 1955

The following is a statement of ownership, management, etc., as required by the act of Congress of August 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1946 (Title 39, United States Code, Section 233) of American Artisan, published monthly at Chicago, Ill., for October 1, 1955.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher: F. P. Keeney, Chicago, Illinois.

Editorial Director: C. M. Burnam, Jr., Chicago, Illinois.

Editor: C. M. Barnes, Chicago, Illinois.

President: Chas. E. Price, Glencoe, Illinois.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Keeney Publishing Company, 6 North Michigan Avenue, Chicago 2, Illinois. Stockholders: F. P. Keeney, Chicago, Illinois; W. J. Osborn, Fairfield, Connecticut; Chas. E. Price, Glencoe, Illinois; Robert A. Jack, Cleveland, Ohio.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

Chas. E. Price, President

Sworn to and subscribed before me this 19th day of September, 1955.

Grace E. Waymire.

(SEAL)

[My commission expires February 10, 1958]

CLASSIFIED ADVERTISING

Classified Section: Rates for classified advertising are 12 cents for each word, including heading and address. One inch $6.00. Count seven words for keyed address. Minimum $2.00 for each insertion. Cash must accompany order. Closing date 20th of month preceding publication.

situation open . . .

FURNACE MANUFACTURER OFFERS EMPLOYMENT AND INVESTMENT OPPORTUNITY

Plant located approx. 100 miles from Chicago. Manufacturing a line of Low priced Oil and Gas Furnaces, both A.G.A. and U.L. Approved. As the principal owner of this small but financially sound corporation, I would like help in carrying the load. If you can contribute in a Sales way, I would invite your buying into this company. I would prefer a partner or partners, but might consider sale of company in entirety. Will deal with principals only. Please give financial references, and don't reply unless you have at least $20,000 to invest. Write Key 1018, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

situation open . . .

POSITION OPEN — Shop Foreman for Sheet Metal Contractor employing 15 to 20 men in town of 75,000 doing industrial ventilating, air conditioning, warm air heating and general sheet metal work. Thorough knowledge of trade required including ability to measure, sketch and lay-out jobs. Qualified to handle men and get results. Permanent employment, last man here 38 years. In reply please give full qualifications, experience and previous employment and salary willing to start. Address Key 1016, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

agents wanted . . .

Manufacturers' Agents with engineering experience now calling on furnace and air conditioning equipment producers wanted by blower manufacturer. In replying include resume of experience, lines handled and qualifications. Reply to Key 1019, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

Distributors wanted. Many areas available to handle patented metal form which creates hollow catacombed concrete floor for complete warm air radiant heating and cooling systems. System being used extensively in schools, churches, residences, etc. To qualify must be financially responsible and have architectural and engineering clientele. AIRFLOOR COMPANY OF CALIFORNIA, INC. 8620 OTIS STREET, SOUTH GATE, CALIFORNIA.

agents wanted . . .

MANUFACTURERS AGENTS needed throughout United States and Canada to represent manufacturer of registers and grilles to air conditioning trade. Must have qualified experience and ability to advise in all phases of air distribution. Write giving general qualificaton to Key 1017, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

for sale . . .

¼" Ribbed Wire Glass, Stock Sheets, 30c sq ft., cut sizes slightly extra, plus boxing, F.O.B. our warehouse. Atcheson Glass Co., 920 Main St., Buffalo, New York.

"CORRECT PRACTICE in OIL HEATING"

A complete reprint of the valuable series

by J. J. Mirabile

This special series covers every angle of oil burner work, including arrangement of shop . . . stocking parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner trouble that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8½ by 11 inches — 57 pages of practical helps. Send $1.00 for a copy to the address below.

KEENEY PUBLISHING COMPANY

6 No. Michigan Ave., Chicago 2, Ill.

alive today

...because they went to their doctors in time

Many thousands of Americans are being cured of cancer every year. More and more people are going to their doctors *in time*. That is encouraging!

But the tragic fact, our doctors tell us, is that every third cancer death is a needless death...*twice* as many could be saved.

To learn how to head off cancer, call the American Cancer Society office nearest you or simply write to "Cancer" in care of your local Post Office.

American Cancer Society

SERVICE SECTION

Rates for display space in the Service Section are $12.00 per inch per insertion. One-inch minimum space accepted. Closing date — twentieth of the month preceding issue.

HANDY TOOLS AND EQUIPMENT

Drive Cleat Notcher

Handles up to 3" wide, 22 ga. or lighter. Hand or foot operation. Mounts on bench, or on job with clamps, or bolts and screws.

New Clip Punch

For fastening slips or seams on ducts. Will push a "half moon" through 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.

Quick Set Dividers

Fastest and most accurate on the market. Two sizes for circles up to 36" and 48". Removable steel points, or pencil. No center punch.

COMPLETE LINE OF SHEET METAL MACHINERY

REINER & CAMPBELL CO., Inc. Post Office Box 5035, Newark 5, N. J.

SHEET METAL MACHINES & TOOLS

Lockformer Machines
Chicago Hand Brakes
Chicago Press Brakes
Pexto Power Shears
Pexto Foot Shears
Pexto Rotary Machines
Pexto Slip Rolls
Pexto Bar Folders
Smith Cleat Benders
Savage Nibblers
Peer Spot Welders
Reed Power Rolls
Wysong Shears
Whitney Punches
Whitney Foot Presses
Pexto Mechanic's Tools
Black & Decker Tools
Bett-Marr Bandsaws
Marshalltown Presses
Punches and Dies
Mipatan Pittsburgh Lock Hammers

SEND FOR CATALOG

CENTRAL-WEST MACHINERY CO.
335 S. WESTERN AVE. CHICAGO 12, ILL.
PHONE: HAymarket 1-0900

RUBBER LADDER SHOES

for safe climbing
. . . Order today.
JOHNSON LADDER SHOE CO.
Eau Claire, Wisconsin

ADJUSTABLE ELBOWS

Registers and Grilles
Deliveries from Stock

Juniper Elbow Co. Inc.
72-15 Metropolitan Ave.
Middle Village, L.I., N.Y.

TWO HEADS BETTER THAN ONE

That's why the Wodack "Do-All"® is an unusually useful drilling tool. One "head" drills concrete, brick, stone—the other drills metal, wood, etc. It's the handy helper for men in construction, installation and maintenance. Drives twist drills, wood bits, star drills (20 diameters), chisels and other hammer tools. Ask for Bulletin 510-AA. WODACK ELECTRIC TOOL CORP., 4627 W. Huron St., Chicago 44, Ill., U.S.A. Phone AUstin 7-9866.

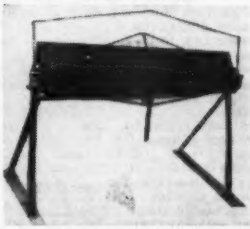
ELECTRIC Hammer

ELECTRIC DRILL

WODACK® ELECTRIC TOOLS SINCE 1916

VYKE BRAKES

36"-22 ga., $43.50
48"-24 ga., $60.00
62"-24 ga., $70.00



VYKE MANUFACTURING CO.,
4146 Jason St., Denver 11, Colo.

This section represents an ideal opportunity for manufacturers to get their messages across to readers of a national publication in their field. Whatever you make or sell, you'll find a large, receptive audience, easily reached at a minimum outlay. Plan now to move your products quickly and economically with consistent advertisements in this section.

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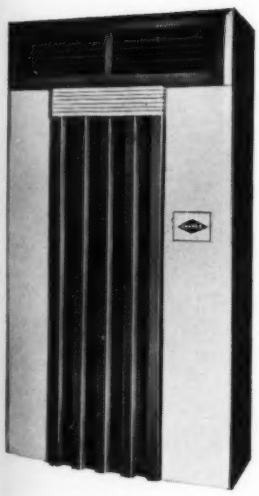

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